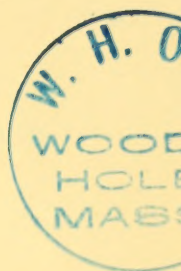


ANNALS
OF THE
SOUTH AFRICAN MUSEUM

VOLUME VIII.

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TRUSTEES OF THE SOUTH AFRICAN MUSEUM.

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ANNALS
OF THE
SOUTH AFRICAN MUSEUM.
(VOL. VIII.)

1.—*The Stone Ages of South Africa as represented in the Collection of the South African Museum.*—By L. PÉRINGUEY, D.Sc., Director.

INTRODUCTION.

I MUST explain, *a priori*, that although for the purpose of illustration I divide, or make an attempt at dividing, the South African Stone implements into several series or types, no *definite* proof has as yet been forthcoming, as will be seen hereafter, that the small, rude implements used here until a few years ago were not utilised contemporaneously with the large, roughly or finely trimmed, tongue- or almond-shaped implements, or the smaller and perhaps still more perfectly worked tools which are met with so profusely in South Africa.

As will be explained as this paper proceeds, the industrial traces left by the people that inhabited South Africa in times which may or may not synchronise with the stages recognised in Europe, consist of three distinct types, and also of a fourth, which is, however, difficult to define.

The First Type.—This type is one considered to be comparable with the oldest division in Europe, which is based there on very good palaeontological evidence, but not always indisputably backed, however, by geological proofs. Tools of this type are known to occur all over the world except in Australia. So much alike are

they that it is difficult to believe they could have evolved independently, but it is probable that the African examples had their origin in fragments due to accidental fracturing of rocks.

The proposition that their evolution took place in Africa, and perhaps South Africa, seems to me quite plausible. Were it possible to postulate for man (whether anthropomorphous ape or not) a very ancient origin—ancient in a geological sense—it is certainly to Africa that one would turn to find his original home, because for incalculable time a large part of Africa has been uncovered by the sea. This is, however, a hazardous plea, because the existence of Tertiary man has hitherto not been asserted with any likelihood of probability.

The type aforesaid consists of massive fragments of rock trimmed sometimes on one, sometimes on both sides, into cleaving, digging, or smiting artefacts, which, whether found in Europe, Asia, Central America, &c., bear such an extraordinary resemblance to each other that one is forced to the conclusion that the type could not have been invented in places so far apart in a spontaneous manner. Although it is quite possible that stone implements of a different character may have evolved from the growing intellectual power of man, it seems impossible that a uniform shape could have resulted from what must of necessity have been rude, uncouth methods, and from material differing in composition. To intercourse or migration of races this result is probably due. On the other hand, if the natural texture of the material used allows under any kind of concussion the preliminary fracture that leads to the evolution of the finer artefacts, then, of course, we may dismiss from our mind these important factors—immigration, emigration, or intercourse.

Professor W. J. Sollas has proposed lately the term "*boucher*" for this type, which I should have otherwise dubbed "*palæolith*," in honour of Boucher de Perthes, the French savant who was, if not the first discoverer, at least the first interpreter, of the occurrence of implements of that type which he found in the gravels of the river Somme.

It is highly desirable that this term should be adopted, because the other appellations either mean nothing, or imply a purpose for which they were probably never intended.

One point, however, cannot be disproved, and that is, the South African palæoliths, other than the ubiquitous and probably surviving type of knife-scraper, correspond to the "*celt*" of the English, the "*coup de poing*" or the "*hache à talon*" of the French, the "*beil*" of the German, the "*hachas*" of the Spaniard, &c., &c. Of the

authors of these bouchers of palaeolithic type known as Chellean, no other cultural trace remains, or is supposed to remain, in places outside South Africa, but this may be due to the fact that relics of their domestic utensils have disappeared, or at least have not been found *in situ* together with the "bouchers." Neither are the traces of the Mousterian stage of culture as clear as one could desire. In South Africa, however, the doubt is no longer permissible, as the evidence I adduce will show.

The Second Type.—The second type of stone implements is in some respects more primitive: occasionally it is of a superior finish, but still primitive. It has lasted until quite lately—a few years back, as a matter of fact: it has also probably replaced the former lithic industry. It may be termed South African Neolithic.

It includes household utensils, mortars, querns, mullers, undoubtedly polished by usage and not intentionally; we have the "!*kwè*," or perforated disk or orb; we have also pottery of a type unknown elsewhere, beads and ornaments of stone and clay, of shells and ostrich egg-shells, bone tools, &c., and also rock paintings and, possibly, rock gravings. It is, however, doubtful if the latter should not be ascribed to the Palaeolithic.

These two types are not often found together, yet they are occasionally met with in close proximity, owing probably to orographical conditions, such as the neighbourhood of streams or rivers that have persisted in their continuance; * subsequent occupation of some points of vantage has led also to these artefacts, made at periods widely separated, coming together ultimately.

The Third Type.—Lastly, we have recorded a few instances of implements the technique of which is that of the true Neolithic European period: small arrow-heads trimmed on either side and with a carefully worked peduncle, or "*tang*," for hafting, and a stone axe with *ground edge*, *all made of local rocks*.

But before adducing my reasons for believing that this multiplicity of form is ascribable to a plurality of races, some extremely ancient, others less so, and others again well-nigh contemporaneous, I must warn the student that it should not be taken for granted that the evolution or transformation of an industry is always on the lines of progress. Evolution often stops, sometimes to start again on its onward career, sometimes—and oftener than not—to retrograde, in the sense that the first line with which we connect it is gradually abandoned for a less complex but not necessarily

* It is a well-accepted fact that primitive people always settled near running waters in the valleys.

ineffective one, which, through supplanting the former, obliterates its traces.

For comparison I have, purposely, somewhat neglected indications afforded by results obtained in England, Northern Europe, or Northern America, not that these indications are not valuable in themselves, but because the composition of the material used in the lithic industry of South Africa, and the resulting produce of the same, clearly assimilates it to that prevailing in Southern Europe, from the Pyrénées eastward and southwards.

This paper is not an attempt to try and solve problems of great consequence for that section of the science of Anthropology dealing with the stone implements, the artefacts of man who had ceased to be anthropomorphous ape. It is a recapitulation, it can hardly be called a narrative, of information obtained in South Africa, classified wrongly or rightly according to the tenets obtaining now.

It is the embodiment of some thirty years' research, and if the explanations can be challenged or criticised the numerous illustrations will doubtlessly escape that fate.

Renewed activity for the last ten years, in the search for these relics—an activity resulting from the discovery of important deposits—in which many and zealous collaborators have joined—has enabled us, at the South African Museum, to accumulate material from every part of South Africa, and of many from beyond. This material forms certainly the most complete collection of its kind. In addition, I was enabled by the courtesy of their owners to examine, photograph, and make casts of certain examples not represented in the Museum Collection.

I have been greatly aided by the members of the Staff of the Geological Survey of the Cape Colony in matters relating to the geological formations or sites of the implements found, many of them through their own exertions. I would fail in my duty if I did not make special mention of Mr. J. M. Bain, without whose intelligence, liberality, and absolutely gratuitous aid my attempt at discriminating in the intricate questions of the South African Lithic Ages would have been greatly impaired, and the results more incomplete. Many are those who also proffered help, advice, and suggestions. To name them all would necessitate many lines of print; but the omission of their respective names will not, I know, be by them taken amiss, for, indeed, unselfishly they toiled.

To Mr. A. R. Walker, of the South African Museum, I am much indebted for his assistance in photographing many of the numerous objects illustrating this paper.

THE PALÆOLITHIC.

CHAPTER I.

SITUATION AND COMPOSITION OF THE PALÆOLITHIC AND NEOLITHIC SOUTH AFRICAN IMPLEMENTS.

In 1866 the late Sir Langham Dale discovered close to his residence on the Cape Flats, near Cape Town, stones showing plain marks of artificial working. These examples were submitted to experts in England, who pronounced them to be undoubtedly man's handiwork.

To the present generation it seems almost incredible that doubt about the workmanship of these implements could have ever been entertained, because among them were the best finished examples of a Solutrian type ever found, and of which two more only have been met with since.

Willing searchers volunteered their services, and this discovery was followed by numerous ones in the Cape Colony, the Transkei, Griqualand West, where these artefacts were found embedded in mining claims "intmixed with precious stones in the diamond-diggings"; later on in Natal, the Transvaal, Southern and Northern Rhodesia, Swaziland, Bechuanaland, the Kalahari region, Mossamedes, &c., &c.

In fact, these relics of primitive civilisation, be they digging-stones or hand-picks, cleaving-stones or axes, flakes having served as knives, saws, burins, piercers, scrapers, or perforated disks for weight-making, orbicular stones for hand-throwing, or perhaps slinging, smoothed pounders, mullers, querns, or mortars, stones grooved by sharpening bone skewers or bodkins, or by reducing to shape the bone shaft of arrows, whether of huge size or ridiculously small, they all abound in South Africa from west to east, from south to north.

When they are of a type that might be assimilated perhaps to the

Aurignacian or Magdalenian, they are exposed on the surface, or occur in shell mounds or in rock-shelters. They are found, occasionally also with more ancient types, on the floor of huge sand-dunes by the sea-coast, when these are exposed and bared, to be no less periodically covered again, by the boisterous prevailing winds. They are common near the water-places called here "fontcins," *i.e.*, springs, and mostly always near to, or in, depressions where rain-water accumulates in the season: the "vleis," or "pans" of South Africa.

When of a more ancient type, Chellean-Mousterian, they are bedded in alluvial deposits, often very deeply. They occur in numbers on the talus of mountains and high hills. They are met with, but then mostly singly, in the exposed banks of rivers; occasionally they are found on the surface, or where river terraces occur which, however, are not proved to be old. Often also they are found singly, where no trace of land erosion is perceptible or traceable, unless we go back to early pliocene—this showing plainly that their presence there is purely accidental.

The material is always a rock of hard texture; no implement made from a *flint nodule* has as yet been found, because the material does not exist in South Africa. The hardest stone occurring locally or at some distance off has been selected for the large and small implements. It is Table Mountain sandstone (more or less quartzitic), Karroo quartzite, dolerite, lydianite, or shale indurated by the intrusion of dolerite, surface quartzite of various textures, cherty sandstone, Dwyka chert, banded jasper, diabase, agate, and chalcedony, white quartz either sugary or transparent, even granite. Implements made of green bottle and white plate glass have also been found.

It happens not unfrequently that implements are met with in situations where the rock of which they are made is known to be absent. Barter may account for their presence there, but it is most likely that they were carried and left where found by owners of migratory or roaming habits or dispositions, clan-forming aborigines that have disappeared, leaving behind them, however, these artefacts as a testimony to their former existence.

It soon becomes plain, even after a superficial examination, that the making of implements of forms so various cannot have been simultaneous. The technique is too dissimilar, the general facies also. Next to the scraper-knife flaked off a hard stone for a passing want and probably discarded immediately after, we find a laurel leaf-shaped lance-head worked by careful secondary trimming on either side and of nearly pure Solutrian type; a "coup de poing" of a finish

equal to the best Acheulean. We have a cleaving-stone surpassing the best Mousterian; a rude, irregular stone with cutting edges fixed with a gum-cement to a wooden handle in the manner obtaining among the Australian aborigines; arrows, the cutting or piercing heads of which is obtained by minute chips set in a triangular piece of similar gum-cement, a few arrow-heads with tang, worked on both sides; and a ground axe of neolithic type are also recorded.

The evolution in the manufacture of these tools took probably a very long time in South Africa, as elsewhere. I have already expressed my belief,* based on purely antiquarian grounds, and according to the tenets of the classification generally accepted, that "we have in South Africa evidence of two periods: a palæolithic and a recent one, which I hesitated to term neolithic; but that there is no evidence as to the time when the former was replaced by the latter, and moreover, that this point will remain for long conjectural." In a word, a very ancient race had peopled Africa at the palæolithic stage. One or more races have supervened, possibly absorbed the former, and perhaps replaced it.

Unfortunately, neither geology nor palæontology has been able to give us, so far, a clue to the possible age of the South African finds. The question is still more complicated owing to material of a palæolithic type of the highest finish, as well as of ruder kind, having been found in valleys where old river terraces cannot be traced, as well as where river terraces exist, or are said to exist.

Then, alongside of these we have implements quite modern, as will be seen subsequently, and yet so primitive in appearance that one can excuse, yet not agree with, those antiquarians who, requiring a beginning to everything, have postulated that thorny subject an "colithic" age preceding or accompanying the "Strepyan." Nor does the difference in composition of the material of which the implements are made help us to elucidate the point of antiquity. A hand-pick of dolerite will be weathered to a stage of unrecognition, while a quartzite one will, during the same time, merely acquire a patina, or polish; a chert or banded jasper tool will remain almost as fresh as when made, while a diabasic one will become deeply pitted or smoothed under similar conditions.

Eolian agencies have also to be taken into serious consideration, in a country where desiccation has been in progress, especially in the

* "The Stone Age in South Africa," in "Science in South Africa," Cape Town, 1905, a publication prepared for the visit of the British Association for the Advancement of Science. The present paper is an enlargement of the necessarily highly condensed précis I then gave of our knowledge of the question.

north-western part, from probably the beginning of the quaternary period.

Great, almost unsurmountable, therefore are the difficulties fronting the Antiquarian in South Africa: first, because geology and palæontology fail him in affording precise indications of an old period from which deductions other than speculative might be drawn; secondly, because the Stone Age is not yet an age of the past, or if so, it ended yesterday; thirdly, because, with one exception, there is no evidence of a Polished or Ground Stone period having replaced the former and preceded a Bronze or Iron Age as in the Palæarctic Region.

The only resource left to him is to turn to the comparative study of the implements themselves, but he is soon led to conclude, on lithological grounds, that these South African implements do not fit in with the classification that answers to the requirements of, and is founded upon, the evidence obtained in Europe.

The latter classification is based on stratigraphical and palæontological evidence, and it depends also on certain industries* which unfortunately did not extend to South Africa.

Classifications are made to be unmade when new discoveries occur. But it is not possible to make the known South African finds fit in with the classifications of Mortillet or of other authors.

There is, moreover, a chain of evidence being slowly forged which points to a resemblance between implements from the Old and those of the New World. This similarity of form is so striking that it makes the Antiquarian pause when he considers the question of the possible identity of the races of mankind that manufactured these implements. Nor is he easy in his mind that this lithic industry is not the result of causes due to the growing intellectual power of man, affecting people in widely distant countries at the same or different times.

He has then to call the Anthropologist and the Ethnologist to his aid. In spite of the fact that a community of races is not implied by a like condition of culture, the Philologist may also be asked to add his quota, although his great error is, and has always been, to "treat a communicable character as an inborn gift."

Thus reduced merely to a lithological comparison, the study of the South African implements might appear to prove barren of results. But it is not so. The Chellean type is the Chellean type of the Palæarctic and other regions. This is indubitable. But the types

* The Magdalenian, connected with the reindeer, and perhaps late on with the stag, is a case in point.

that might correspond with the Aurignacian, Solutrian, and Magdalenian cultures, especially the last, have an indescribable facies of their own which may be said to be South African. On the other hand, the "pygmy" implements, and others with the "bord abattu" of the French, cannot be very readily distinguished from the English, French, and Indian implements of the same type, except, of course, by the material of which they are made; but they more closely approximate the Algerian and Morocco examples.

The South African Aurignacian or Magdalenian type, may have been, and probably was, as old as that of the corresponding period of Europe; but it has outlived it. The "pygmy" culture lasted in the Cape Colony until the sixties of the last century, or thereabouts, and is lasting still in the Kalahari.*

Truly we have not here a definite line of separation between the artefacts that are hacked stones or those that are polished stones, in so far as concerns weapons or tools that might have been used as weapons; but we have here an abundance of household utensils that might prove a counterpart to the age of the polished stone, but which have a facies eminently South African.

This peculiar feature of what I prefer, rightly or wrongly, to term the South African Neolithic type is that, although for certain purposes stones were polished, yet it cannot be said that an attempt was made to make the weapons of the same period more serviceable or more effective by this polishing or grinding process. There is thus a big *hiatus* in the evolution of South African stone implements.

* We find it connected also in some Cape caves with large implements of palæolithic type.

CHAPTER II.

DIVISIONS OF THE PALÆOLITHIC SERIES. EOLITHS. PALÆOLITHS OF LARGE SIZE OTHER THAN SCRAPER-KNIVES. THE DIFFERENT TYPES OF SOUTH AFRICAN PALÆOLITHIC IMPLEMENTS.

In order to compare our South African series and make them synchronise with those met with elsewhere, it may not be out of place—in fact, it is necessary—to give here, but on broad lines, the generally accepted divisions of the Pleistocene, or ancient Quaternary.

Whether they are justified or not for the South African implements, the general terms will prove useful; but whether these divisions as now accepted will prove provisional, in view of the later discoveries of human remains, is a question of the future.

These divisions, beginning from the lowest, are :—

Strepyan
Chellean
Acheulean
Mousterian
Solutrian
Magdalenian
Azilian

Another arrangement rejects the Strepyan and accepts the—

Chellean
Acheulean
Mousterian
Aurignacian
Solutrian
Magdalenian
Azilian

A third arrangement, and one which would seem more suited to the South African finds, rejects the Strepyan and unites the Chellean, Acheulean, and Mousterian in a sub-division called the Chelleo-Mousterian.

The reasons for these divisions are as follows:—

CHELLEAN.—During this period Europe was a warm country with a mild and damp climate. The fauna is characterised by the presence of the *Hippopotamus* and *Elephas antiquus*. On the archaeological side were prevalent stone implements trimmed on both faces, and of an amygdaloidal (almond) shape.

ACHEULEAN.—With the Chellean is closely connected the Acheulean, which may be termed a phase of transition. The fauna consists of the animals of the Chellean period, among which, however, and in certain places, are found others belonging to the period following, *i.e.*, the Mousterian.

MOUSTERIAN.—During the Mousterian, termed also Middle Palæolithic, the temperature is lower and the fauna is that of a cold, moist climate. The Mammoth, an animal of some 16 to 18 feet in height, takes the place of its still larger predecessor, *Elephas antiquus*; it is associated with the woolly rhinoceros, having two horns over the nose, the larger of the two sometimes 3 feet in length. The Acheulean implement is still occasionally, but seldom, met with. The Mousterian implement is usually chipped on one face only; it is probably detached from the matrix, or nucleus, whether flint or quartzite, at one blow after or before the outer face has been shaped into the requisite manner; the reverse side shows well-nigh invariably the convex node called “bulb of percussion.” The maximum size is about 6 inches long, the average $2\frac{1}{2}$; the edges are often very carefully retouched (secondary chipping).

SOLUTRIAN-MAGDALENIAN.—The characteristic of this period is a dry cold succeeding to a moist, damp cold. During this period the severity of the climate, especially in winter, induces man to seek shelter to avoid partly its rigour. That shelter he finds in the caves or grottoes formed naturally in calcareous formations, or under hanging rocks.

The *feræ naturæ* multiply. Man's mental powers are taxed to their utmost to resist his natural enemies, maybe by brute force, but much more likely by craft, in order to obtain his food, and to secure garments as protection from the severity of the climate. This period, divided in two successive ones, is the age pre-eminently of the reindeer, and it leads progressively

from the *old* Quaternary or *Pleistocene* to the *actual* Quaternary or *Holocene*.

During the age of the hippopotamus or the elephant (*E. antiquus*), Chellean man's only relics are stone implements—feeble weapons, after all, against the redoubtable foes he has to encounter.

But from sheer necessity growing wants lead to the invention of more complicated implements or tools, and during the Reindeer period these forms were multiplying in adaptation for special purposes.

Slender, even delicate, tools of ivory, bone, horn occur side by side with stone implements of different shapes, possibly pre-Solutrian. Flint lance-heads admirably worked on each side, arrow-heads with peduncles, or “tang,” exhibiting a wonderful progress in “hand-knapping,” are found together with simple, or barbed darts, arrow-heads, some simple, some notched, and others triangularly incised at the base; bodkins, &c., made of ivory or bone are common.

It is at that time that the sense of what we call “art” appears to awake in the mind of this cave-dweller, or Troglodyte, and he gives expression to it in the shape of sculpture or painting, petroglyphs and glyptics, some of which are admirably preserved to this day, and treated in a manner that throws our so-called Bushman paintings completely into the shade.

Yet this man's predecessor, the late Mousterian, is dolichocephalic with an index of 75, and a breadth height of 62·5, that is to say with measurements corresponding with a lower stage than those of any existing race. The height is moderate, 1^m 60; he has large orbits, “the superciliary ridge forms a kind of vizor above them”; the jaw is powerful; there is a total absence of chin, &c.”*

However primitive this middle pleistocene man may seem if his physical characters only are taken into consideration, yet he buries his dead with care. Of the skeleton found in the classic grotto of “Le Moustier,” it is said: “The posture is that of repose with the face turned to the right, the right arm is under the head which is surrounded by flint flakes. Beside the skeleton were found, in addition to the flint implements of the Mousterian type, some of the Acheulean, among them a splendidly worked “hand-wedge.”†

A human jaw has been also lately discovered to which an older

* Haddon, A. C., “Palæolithic Man,” *Nature*, 1909, July 29th.

† Boule, M., “L'homme fossile de la Chapelle aux Saints,” *L'Anthropologie*, 1908, p. 519.

still origin is attributed, but no implements seem to have been found with it.*

For our purpose the lithological or other divisions following those already enunciated beyond, if not including the Azilian, do not bear any distinct connection with the South African; and even the Solutrian-Magdalenian stage does not seem to exist here in the succession claimed for it in the Palæarctic region.

But we have traces of culture in the shape of petroglyphs or glyptics that remind one of those of the Solutrian, if not Aurignacian, period. We have also an autochthonous race, or the remains of it, the "San," Strand Looper, Barwa or Bushman, the cephalic index of which, inferior to that of any other living man, is perhaps only slightly superior to that of the man of the "Chapelle aux Saints."† Members of that race were undoubtedly capable of producing glyptics; of this there is no doubt.

It is not so certain, however, that the numerous petroglyphs (rock engravings), fairly numerous in South Africa, were executed by them.‡ But of one thing we are sure, and that is that these rock engravings have been executed with stone tools.§

EOLITHS.

It seems logical that there should have been a beginning in the manufacture of these stone implements that show a considerable skill in the making. Primitive man made use of round, flat, or pointed stones, either rolled by water, detached, or sharpened by natural or accidental agencies; that afterwards he attempted to improve on them, or made them more suited to a requisite purpose, appears to us now very natural. This hypothesis is, moreover, borne out by the progress made in the manufacture of implements from the palæolithic type to the polished Stone Age forms.

When, therefore, flints somewhat or greatly amorphous in general appearance, and which were afterwards dubbed "eoliths," were firstly discovered on the Kent Plateau, in England, by Harrison, it was claimed by him and others on the ground that evolution should

* Alsberg, M., "Recently discovered Fossil Human Remains," *Globus*, vol. xcv., 1909.

† The cranial capacity of Bushmen is 1·285 c.c., according to Shrubsall, "Notes on some Bushmen Crania, &c.," *Ann. S. Afric. Mus.*, v., 1907, p. 235. Previous observations had given 1·330 c.c. (male) and 1·255 (female).

‡ Péringuey, "On Rock Engravings of Animals and the Human Figure, the Work of South African Aborigines, &c.," *loc. cit.*, vol. xvi., 1906.

§ Péringuey, "On Rock Engravings of Animals and the Human Figure found in South Africa," *Trans. S. Africa, Phil. Soc.*, vol. xviii., 1909.

have had a beginning, that these flints were the first attempt of man at trimming and working stone for his requirements. This discovery, followed by similar ones in Europe, led many Antiquarians to adopt the theory.

It may not be out of place to give here an explanation of the making of tools by blows or percussion.

If the blow is direct and delivered with great force the detached part is not bounded by a plane surface. Close to the part struck there is produced a conchoidal fracture, which gives rise to a "bulb of percussion." That is to say, one of the faces of the detached part presents at its thicker extremity a convex swelling corresponding to a concave cavity in the matrix or nucleus. This I may add, in passing, invariably occurs not only with flint nodules but also with all kinds of rocks used for that purpose in South Africa.

This conchoidal fracture seems, however, to be altogether absent in the flint "eoliths." M. M. Boule has also shown pretty conclusively that mechanical agents easily and naturally transform flint nodules into "eoliths."* The discovery of mechanically made "pseudo-eoliths" has undoubtedly modified the views of many of those who, endowing primitive races with characters which could have resulted only from evolutionary progress, were inclined to find in these so-called implements with "trimmed edges," "double-," "crescent-shaped," "hollow-end," "horse-shoe" scrapers the most ancient attempts of man at the manufacture of tools.

I may add that with the human remains of the Neanderthal-Spy—Le Moustier, et La Chapelle aux Saints race—remains of a man of an inferior type, more closely connected with the anthropoid apes than with any other ancient human group, such as the "Cro-Magnon"—were found stone implements, *not* eolithic, but of the Acheulean and Mousterian types.

I would not have entered into this thorny question were it not that it is claimed that "eoliths" are found, among other places, near Pretoria, Transvaal, and also that they have been figured as such.†

It is therefore not out of place to give here the history of that discovery. The late Mr. G. Leith made in the neighbourhood of Pretoria a collection of stone implements, mostly from the ironstone gravels through which the Aapies River flows. Mr. Nichol Brown, a co-worker of Harrison of the Kent Plateau eolith fame, had occasion to inspect that collection in 1897. He showed me some of these

* M. Boule, "L'origine des éolithes," *L'Anthropologie*, 1905, p. 253.

† G. Leith, "On the Caves, Shell-mounds and Stone Implements of South Africa," *Journ. of Anthropolog. Instit.*, i., 1899, pl. 18.

notched scrapers, asking whether I considered them to be the handiwork of man. I replied in the affirmative, adding, however, that Nature's agency had a great deal to do with their present state. Two years afterwards Mr. Leith published his paper, illustrated by one plate bearing the legend, "Eoliths from Pretoria."

It is not possible to attribute to the implements figured by Leith a more ancient origin than to the Chellean, Acheulean, or Mousterian types occurring so abundantly all over South Africa; and this for the following reasons:—

1. These Pretoria ironstone river gravels are not very ancient.
2. The notched scrapers are the rarest.
3. These scrapers are not as smoothly polished as represented in the plate, this smoothness being due to the process-block reproduction.
4. Only those examples that would prove likely to support the "eolithic" theory were selected for reproduction.
5. Well-finished palæoliths were afterwards found *in situ*, showing therefore contemporaneity with those so-called Eoliths.

I have received from Mr. Leith himself, and also from other contributors, a considerable number of these implements; they show either no abrasion of the edges in many cases, and again considerable abrasion in others; some are notched, others are not; some are more or less polished; some again show no sign of having been smoothed either by eolian or water action. But when abraded or partly polished the action is clearly due to the flow of an intermittent river.

If one compares these specimens with some of the crescent-shaped Eoliths of Harrison, and Reutot, one is certainly struck with the similarity of the deep arcuate emargination of the thinner part of the Pretorian pseudo-eoliths. But the explanation is a simple one. Drawn into the vortex of turbulent waters while in flood, the denser part of the chipped stone offers more resistance to the moving agent, and the thinner lighter part is therefore thrown more forcibly into contact with the abrading obstacles, and suffers in consequence. This is especially illustrated in the knife-scrapers, or chips of the silicious rock found near the Victoria Falls. In no case is the thicker part of the chip dented in the horseshoe fashion claimed for the Kent eoliths* (*cf.* Cuts 3, 6, 7, 8 of Fig. 119, Pl. XV.).

For the above reasons the "eolithic" origin of the Pretoria imple-

* Fig. 28 is a good instance of an abraded chip that on Mr. Leigh's theory should be considered as an eolith. Yet it was found at the foot of Port Elizabeth Hill together with extremely water-worn quartzite implements (Figs. 25, 26, 27, Pl. IV.).

ments must be dismissed. They are not the precursors of the highly finished or rougher South African types, and are neither the initial nor the secondary stage of the South African palæolithic forms.

PALÆOLITHS OF LARGE SIZE OTHER THAN SCRAPER-KNIVES.

But if we reject, for the reasons already given, the evidence of the Pretoria implements as eolithic, we are faced with forms of a type and technique so truly palæolithic, and especially lower palæolithic, that doubt as to the identity of shape is no longer possible.* Their resemblance to the quartzite implements found in Europe, Algeria, Congo, India, is indeed extreme, and the process of manufacture appears to have been the same.

The late E. T. Hamy was quite justified in stating of a quartzite cleaving, or hand-wedge boucher found at Koffyfontein, in Orangia, that, if not made aware of its source, a French or Spanish ethnographer would be justified in pronouncing it to have been found in one of the palæolithic "stations" of the Haute-Garonne, in France, or in the neighbourhood of Madrid.†

So alike, indeed, to the bouchers of the neighbourhood of Toulouse, as figured and described by J. B. Moulet,‡ are the bouchers of the Stellenbosch-type, that the reproduction of Moulet's own plates could have served for a great part of the illustrations given in this paper.

It is not only to the quartzite implements of France or Spain that the verisimilitude of the South African bouchers is restricted. As far back as 1868 R. Bruce Foot called attention§ to implements met with in the laterite of Madras. Such artefacts have been found in the Narbadda Valley in Hindustan|| and other localities.

We have in the Museum specimens from Codapah, in the Madras Presidency, resembling so much in material and workmanship the South African examples as to be verily indistinguishable. The same may be said of some of the Congo quartzite implements¶; of those

* I cannot refrain from quoting here a phrase in a letter I received from M. Cartailhac, the veteran of French Antiquarians: "Mais leur aspect suffit pour les faire reconnaître, aussi bien que si c'étaient des médailles de César ou de Victoria."

† Hamy, *Bullet. Mus. d'Hist. Natur.*, 1899, No. 6.

‡ "Étude sur les cailloux taillés par percussion du pays toulousain," *Archiv. Mus. Hist. Nat. Toulouse*, pt. 2, 1880.

§ "On Quartzite Implements of Palæolithic Type from the East Coast of Southern India," *Intern. Congr. Anthropol.*, Norwich, 1868, p. 249.

|| Sollas, "Palæolithic Races," *Science Progress*, pt. 2, 1909.

¶ Cf. X. Stainier, "L'Âge de pierre au Congo," *Ann. Mus. d. Congo*, i., pt. 1, 1899. V. Jacques, "Instruments de pierre du Congo," *Mém. Soc. Anthrop. Bruxelles*, xix., 1901.

from Algeria,* &c., &c., which form part of the Museum collection.

I shall never forget my pleasurable astonishment in discovering quite accidentally in a clay pit in Stellenbosch one of the most perfect implements of its kind, but of relatively small size (Pl. I., Fig. 4).

This find led to the discovery of deposits or "stations" all over the Stellenbosch and neighbouring districts in the Cape Colony—discoveries which still continue.

THE DIFFERENT TYPES OF SOUTH AFRICAN PALÆOLITHIC IMPLEMENTS.

In spite of their general resemblance to each other, a glance at the illustrations completing this paper suffices to show that these bouchers exhibit a discrepancy in form and workmanship, in technique and composition, which, although in many cases slight to the unaccustomed eye, may be taken to indicate that they have not all been manufactured by the same race, or at the same time, or in the same localities.

Probably through long practice, I find no difficulty now in dividing the South African bouchers into several types, owing to their appearance or facies or to the material of which they are made.

I thus venture an attempt at the classification of the types as I understand them. I must explain, however, that this classification is based on those implements which by their shape, size, or configuration correspond with the cleaving, digging, or smiting tools of the Chellean-Mousterian periods, as generally accepted. The evidence afforded by scrapers, knives, missiles, burins or bores, pottery or other implements of domestic use cannot be taken into account here. It will be fully treated in other chapters.

I may preface the description of the stones by explaining that in the best finished implements which are not obviously cleavers, hand-wedges, or axes, the tongue or amygdaloidal shape prevails; the ovoid or discoidal is extremely rare, no matter to what type the implement may belong (*cf.* Fig. 24, Pl. III.).

I may also state that the specimens figured have not been selected on account of their singularity or finish, and although no two pieces are ever alike, yet the figures are strictly representative of various forms occurring in South Africa.

* M. Boule, "Étude paléontolog. et Archéolog. sur la station paléolithique du lac Karar (Algérie)," *L'Anthropologie*, xi., 1900.

STELLENBOSCH TYPE.—It is in the valleys of the Eerste, Berg, Breede, Oliphants, and sundry rivers and their affluents in the Cape Colony that some of the best finished implements of that type have been discovered hitherto.

Made of quartzite varying in closeness of texture (Table Mountain sandstone), but the grain of which, however crystalline the sandstone may be, precludes the possibility of their ever acquiring a fine polish, they are of a type so numerous illustrated in all the South African districts of the Cape Colony and also beyond (Cape, Stellenbosch, Paarl, Worcester, Tulbagh, Ceres, Clanwilliam, Malmesbury, Piquetberg, Caledon, Mossel Bay, Knysna, Port Elizabeth) that they may well be ranked under the name,* “Stellenbosch type.”

They are all broadly flaked either on one face or both; the edges are sharp, but very sinuous, and often continued round the butt, but they often also retain there the rounded original pebble shape; they show no distinct secondary trimming except faint traces at the point; none are rectilinear in profile.

Figs. 1, 2, 3, 4, 20, 32 represent the best finished tongue-shaped, Stellenbosch-type implements; they are chipped on both faces, but the trimming of one side does not correspond with that of the other.

Very variable indeed in shape and size are the artificially worked stones of that type. The crudeness and imperfection of some of them contrast singularly with that of Figs. 1, 2, 3, &c.; they are no longer tongue-shaped or amygdaloidal (see Figs. 12, 13, 14, 15). The butt is shaped into a rough point, as in Figs. 12 or 15; both ends may be reduced almost equally to a sharp point (Fig. 14), or one of the points into a broad wedge (Fig. 13); the apices are thus variable in form. But whatever the shape be, crude or finished, the median, always sharp, ridge of the two faces as shown in the absolute profile of the bouchers does *never* correspond.

Next to, and found together with, the highly finished implements comparable, except in size, with the best Acheulean (Figs. 1, 2, 3, 20, 32), is Hamy's “hache à talon” (Figs. 5, 6, 7, 8), in which a part of the water-worn, rounded quartzite boulder has been retained more for convenience than through accident.

This retention of the contour of the boulder, or of part of it, is of very frequent occurrence in the Stellenbosch—more so than in any of the other types I have seen (Figs. 7, 8, 9, 10, 29); it is extremely pronounced in Figs. 25 and 26.

* I have seen an implement of that type alleged to have been found in Natal. It is in the G. Leith Collection, now in the Pretoria Museum. I know of similar ones from East London, as well as from Swaziland.

Many of the bouchers of the Stellenbosch type retain also on one side the primitive cleavage with very little paring; but this is not restricted to that type only.

ORANGE RIVER TYPE.—If we were to consider only the palæolithic industry of the southern districts of Cape Colony its homogeneous form would certainly stand as absolutely typical, but proceeding northward we find that in the so-called “Karoo” parts of Cape Colony the palæoliths are made of dolerite, oftener of shale indurated by the intrusion of dolerite, or of a hard chert band occurring at the top of the Dwyka shales. There also the “knapper” has, where possible, made use of large pebbles or boulders rounded either by water or other natural causes. These implements are rude, and often extremely primitive.

In the best examples the flaking, either through imperfect knowledge of the craft, possibly also owing to the texture or composition of the material used, is irregular: one of the faces is often hollowed or very concave; the surface of the rock from which it was detached is often, and the rounded part of the boulder occasionally, retained. Further discoveries may reveal implements of a finer finish; hitherto only three “stations,” two in the Ceres and the other in the Cradock District of Cape Colony, have been found. The workmanship, although akin still to that of the Stellenbosch, merges, however, into the type that one meets with in the valleys of the Orange, Hartz, Vaal, Limpopo Rivers and their affluents, as well as in the Eastern Provinces of the Cape Colony, and which I propose to call the Orange River type.

When we reach the Griqualand West District or its immediate vicinity, especially Prieska and Kenhardt, the difference between the above-mentioned Karroo forms and those occurring there is in some cases extreme. These palæoliths are mostly made of banded jasper, brown or yellow, and occasionally white with bluish veins—an extremely hard material which, owing to the banding, splits or flakes into small facets seemingly more readily than quartzite. The implements thus produced rival the best Acheulean flints in finish (Figs. 36, 37, 38, 39, 40, 41, 42, 44, 48, 49, &c.). They do not usually attain the great size and heavy weight of many of the Stellenbosch-type examples, yet the Museum possesses one 255 mm. long, 106 mm. broad, but only 40 mm. in thickness, found near Griqua Town. At Griqua Town also was found the boucher (Fig. 35), which is made, however, of semi-translucent chert. In some examples a part of the natural banding is retained (Figs. 37*a*, 39*a*); others exhibit the transverse fracture of the point (Figs. 36, 40); on one face of Fig. 41

there remains a part of the conglomerate in which it was embedded, and which contains chips of jasper, the material of which it is made. But in the Prieska, Kenhardt, Hay Districts (Cape Colony), implements of quartzite or diabasic rock are found of a shape and finish rivalling those of Figs. 36, 37, 39, &c. Fig. 36 is made of banded jasper; 37 of crystalline quartzite; 43 of diabase. The workmanship is of so superior a type, apart from the material used, that it might perhaps be ranged as a sub-type of the Orange, *i.e.*, the *Griqua*.

The composition of this Orange River type is various; it is made of more or less coarse or sub-crystalline quartzite, of diabasic rock often very deeply pitted and occasionally vesicular, banded jasper, dolerite or aphanite, sometimes, but very seldom, chert (Districts of Bedford, Alice, East London, Carnarvon, Kenhardt, Prieska, Warrenton, Pniel, Vryburg, Modder River, Smithfield, Transkei, Pretoria, Witwatersrand, Potchefstroom, Vereeniging, Swaziland); jasper (banded ironstone series), quartzite, felsite, opaque vein quartz, diabase, granite, chalcedony in Southern Rhodesia (Hartley and Charter Districts, Zambesi River); chalcedony also or other silicious rocks in N'Gamiland, and Bechuanaland Vryburg, Morokwen, Mafeking, &c.

Near Pniel and Warrenton, on the Vaal River, the palæoliths, made either of dolerite or diabasic rock, are worn so smooth that some might, on a superficial examination, appear to have been artificially polished (Figs. 53, 55, 56, 57, 59, 60); the nearly oblong example (Fig. 43) from Calvinia in the Cape Colony is quite smooth; but in Figs. 53 and 61, the latter from Prieska, a faint contour of the chipping is retained, showing thus that the smoothness is not due to an intentional polishing of these artefacts.

Some of these Vaal and Harts' River Valley bouchers, as well as some from the Transkei, are often of a very large size and quite equal in that respect to the Stellenbosch. Generally they are of a better finish, but it must be remembered that in all likelihood only the best implements are picked by the casual collector.

On the whole, and in spite of the differences mentioned, the facies or general appearance of these two, or perhaps three types is astonishingly alike, as the following examples will prove. Fig. 29 is that of a rough, massive implement made of quartzite, and was found in the Tulbagh District of the Cape Colony. A part of the original rounded surface of the boulder from which it was made has been retained. It is a very unwieldy tool, and very heavy.

Fig. 30 comes from the Charter District of Southern Rhodesia. It is almost a replica of Fig. 29, and is made of impure jasper; a part

of the original surface of the matrix or nucleus has also been retained, as in the Tulbagh example, and although, owing to the composition of the rock of which it is made, it has undoubtedly required more knowledge of trimming, its resemblance to the Tulbagh implement, as well as its dimensions, are strikingly alike.

If we turn to the best finished tongue-shaped or amygdaloidal implements the similarity in examples originating from localities far apart is equally suggestive.

Fig. 31 is made of granite and is the first African implement of that rock found hitherto.* It comes also from Charter, in Southern Rhodesia. The right edge was broken by a waggon going over it. It is very finely grained and shows a great deal of weathering. The felspar is kaolinised. On comparison with Fig. 32, which is the reverse of Fig. 3, one of the best finished quartzite implements of the Stellenbosch type and picked up near that town, one finds it to be of the same shape, of the same type of manufacture and to have the same finish. The cleaver, Fig. 33, also from Charter, and Fig. 34 from Stellenbosch, exhibit the same resemblance, although differing in composition.

These Southern Rhodesia implements were discovered by Mr. W. H. Kenny, a prospector, who found them isolated, some on the surface, others "sticking out" of the banks of a "spruit."† In that collection were examples very similar indeed to the banded jasper palæoliths of Griqua Town, but made of impure, not banded jasper. Some are small chalcedony bouchers chipped on one face only or nearly flat, and resembling greatly, in fact identical with, the Zambesi silicious implements; but most interesting were three made of white quartz from vein, and respectively 133, 95, and 80 mm. long by 80, 68, and 66 mm. broad. The larger is opaque, the outer two crystalline; the smallest of the three is broken at one end. They are somewhat coarse, and the edges resulting from the "knapping" are very blunt, but they have probably taken as much time as, and demanded even greater skill in shaping than, the chalcedony palæolith from the Zambesi River described and figured by Mr. Henry Balfour.‡

* Granite implements have also been found in the neighbourhood of Toulouse, but, I believe, there only.

† I here take the opportunity of thanking Mr. Kenny for allowing me not only to examine his very interesting collection, which I understand is now in England, and make notes thereon, but also to have some of the examples photographed for the purpose of this paper. He has just lately sent me a series of the same for our Collection.

‡ "Note upon an Implement of Palæolithic Type from the Victoria Falls, Zambesi," *Journ. Anthropol. Inst.*, vol. xxxvi., 1906 (170-171).

This palæolith is 137 mm. wide and 66 mm. thick. It weighs 26 oz., and is of rude manufacture, due certainly to the nature of the rock. A part of the original shape of the nucleus has been retained at the butt, and it is trimmed on both sides.* I have seen another boucher made of the same material but smaller, and unlike any other that I have seen. It is in the shape of a transverse wedge, blunt at the top and tapering thence to a fairly sharp edge, intended probably for cutting. It is the property of Mr. F. White, of Bulawayo.

Large bouchers made of chalcedony seem to be, however, very rare, but some of moderate sizes have been found; they pertain, though, more to the scraper-knife type (Pl. XX., Figs. 121, 122).

Implements made of similar material have been lately found in German South-West Africa (Pl. XIX., Fig. 147), but they can in nowise be compared with bouchers. They are plainly ostrich egg-shell borers, and if they are made of the same material as that of some of the large bouchers of the Zambesi Valley, it is due to the fact that silicious rock, and perhaps no other exposed one of hard texture, was available.

Together with these chalcedony implements, quartzite bouchers have been found in the so-called river gravels of the Zambesi,† but these implements must, at least provisionally, be ranged like those from Charter (Pl. IV., Figs. 30, 31, 34), among the Orange River type.

* Mr. Balfour informs me that he found several examples, together with non-silicious ones.

† Discussing before the Geological Society the occurrence of stone implements in the neighbourhood of Victoria Falls, Mr. T. Codrington states that he found four implements of a palæolithic type; "the three of brown quartzite are very like implements from India, labelled in the South African Museum as greatly resembling South African implements in material and workmanship" (Quart. Journ. Geolog. Soc., Aug., 1909, vol. lxxv.).

CHAPTER III.

THE MANNER IN WHICH THE BOUCHERS WERE MANUFACTURED, AND THE TOOLS USED FOR MANUFACTURING THEM.

THE MANNER IN WHICH THE BOUCHERS WERE MANUFACTURED.

All the South African bouchers have been shaped by percussion. Pressure applied with bone or wood could not produce the desired object with the material of which they are made.

The nucleus is of two sorts: water-worn or naturally rounded boulders or large pebbles, and fragments artificially detached from rocks. Either might have been heated and flakes split off by the application of cold water.

The sudden contraction would not, however, produce the concave fracture of the matrix which invariably corresponds with the convex side of the detached part (Fig. 69, Pl. X.). This convexity which corresponds with the "bulb of percussion" of smaller implements is very seldom faint; in Fig. 70, Pl. X., however, it is not very marked.

I have, by good luck, been able to make observations on the site of a most interesting "station," or deposit, extending for several miles (Simondium, Cape Colony), and have collected material illustrating most clearly, and also most abundantly, all the phases of the manufacturing process.

The primitive man who made the Chellean-type bouchers had, in all likelihood, found by experience that implements are more easily obtained by the fracture of pebbles or boulders than from pieces detached from the outcrop of rock. This opinion is certainly borne out by the very numerous implements of both the Stellenbosch and Orange River types that retain part of their original contour.*

So numerous indeed are the bouchers of this type in the Draken-

* In the Toulouse and Madrid deposits the same thing occurs.

stein Valley of the Cape Colony and elsewhere, as to almost justify the belief that the makers, satisfied that the stones could be of service at that stage, gave them merely a preliminary paring until they had either the time, or had acquired the skill necessary for transforming them into that tongue- or amygdaloidal-shaped boucher which is equal to the best Acheulean, the rarity of which among roughly shaped objects seems to point to the difficulty inherent to, or the skill requisite for, their finish.

A careful inspection of the numerous artificially worked, originally rounded or water-worn boulders of the Simondium "station," indicates that the ultimate shape of the boucher depended mostly on the manner of the fracture.

Thus, in Fig. 68, Pl. X., a fragment has been detached from a river boulder in the manner shown. The face of the detached part is nearly even, the fracture of the left side is irregular; in the side view (Fig. 69), the convex part of the fracture corresponds with, or is akin to, the concave part of Fig. 72. On the right side of Fig. 69 the marks of blows delivered in detaching the flake are very noticeable.

This fact does away with the rock-heating and cold-water-throwing hypothesis.

So much, then, for the preliminary fracture. Let us now try to realise what the ultimate shape of this implement would have been, had the "knapper" been allowed to finish it.

The pointed part is already obtained; paring the butt would probably be the next step, because a comparison with Figs. 74 and 73 shows that the reduction of the butt-end has been effected in the manner suggested before the greatest part of the original surface of Fig. 73 was chipped.

The boucher would be greatly reduced in size by this operation, but its utility as a hand-pick would have been increased rather than impaired by the smooth, even, original surface being retained on one side instead of being faceted as on the other. In the Simondium "station" these "bouchers" pared on one side only were, as I have already remarked, very numerous, but together with them I found there also some of our best finished examples (Fig. 5, Pl. I.). Fig. 20, Pl. III., comes also from the same spot. In the Eerste River Valley I met with the same experience.

Great importance attaches to the fragment Fig. 68 (face view), 69 (side view), Pl. X., because, unlike what is alleged for European bouchers, and other implements of the Mousterian type, the upper face has not been fashioned first and then detached. This conclusion is borne out by *most* implements of that kind which I examined.

It is true that in Fig. 70, Pl. X., the preparatory stage bears no trace of the blows that detached it from the matrix. The fracture is almost vertical, and the strongly convex outer side is artificially pared; but this is probably due to the difficulty experienced in detaching the same from the nucleus.

Owing to its shape, it would prove almost an impossibility to turn this first stage (Fig. 70) into either a tongue-shaped or amygdaloidal boucher. With it I found, however, several examples having the shape of Fig. 71—a fact which shows that only in this form the artefact shown in Fig. 70 could have ultimately resulted, unless extreme skill had been applied to turn it into an amygdaloid boucher of very much smaller size; but as Fig. 71 has been used in its present shape, our conclusion is justified.

In Fig. 63 we have a split boulder, which leads to the evolution of either the axe or cleaving tool (Fig. 66) or the spade-like pick (Fig. 67). Fig. 64 is that of a water-worn boulder, bearing on the left and right sides traces of “knapping,” the beginning of its transformation into either the broad-end boucher (Fig. 65) or the pointed one (Fig. 62); Fig. 63 is a good illustration of the preliminary trimming that will result in the ultimate production of Fig. 62.

The examples I give here are all taken from one locality, *i.e.*, Simondium, but I could have quoted as effectually from several other places.

In the chapter dealing with the purpose for which bouchers were made I allude to the great size and correspondingly heavy weight of some of the South African implements. Fig. 20*a* is that of the largest and heaviest I have as yet met with, and the point plainly bears marks of usage. Many were the speculations which its shape and its partly unfinished appearance and heaviness suggested; but if the workmanship of the fine implement shown in Fig. 20, Pl. III., is carefully compared with that of Fig. 20*a*, it becomes clear that the latter would have ultimately been turned into Fig. 20. All the facets, although reduced in size in proportion to that of the finished implement, are traceable: the concave depression on the left side of Fig. 20 is the reduced one of Fig. 20*a*; the median ridge of the apex is discernible in both; the flat part on the right side of Fig. 20*a* is still indicated in Fig. 20, &c.; and the same thing happens on the reverse of both.

The trimming of Fig. 20*a* into the shape of Fig. 20 would, however, cause a considerable diminution in size and weight before the esthetic sense of the maker would be satisfied with the ultimate finish of the implement into the characteristic shape of Figs. 1, 2, 3, 4, 16, 17,

&c. Only large boulders would be selected for the first stage of an implement like that of Fig. 20*a*, and such large fragmented ones are not uncommon.

One that I remember especially, because it was of such a great weight that I could not carry it with me, was oblong, 450 mm. in length, and clean cleft longitudinally.

In the same manner as the sharp-pointed bouchers so would the cleaving implements be produced, only that they would in all likelihood be fashioned more easily. Both faces need not be knapped to procure a serviceable weapon in the shape of an effective cleaver. From the detaching blow there has resulted a smooth, slanting shape on one side (Figs. 47, 50, 53, 57), while the other face had to be similarly treated to obtain a corresponding slanting side in order to make the cleaver effective. Sometimes the natural face is retained (Fig. 51). It would seem at first sight that a cleaver could be more easily produced than an amygdaloidal hand pick, and it probably was. Yet Figs. 48, 49, 56, &c., denote a great deal of skill in the making. They are worked on both sides, and so are Figs. 33 and 34—the first from Stellenbosch, the second from Rhodesia. Perhaps they were intended both for cleaving and digging, but as cleavers they would certainly prove less serviceable than Figs. 47, 53, and 57, which have undoubtedly been produced with less skill. The explanation is that the cleaving propensity is due, as in the case of the digging-tools, to the preliminary trimming on which the shape depended. It could not be corrected without much trouble or dexterity of hand. It must be also remembered that these cleaving tools are few in proportion to the number of digging bouchers. One would expect that, this mode of manufacture being the easier, the proportion would be reversed, and also that the style or type would be older were it not that the Mousterian (and most of the axes are Mousterian in type) has in the palæarctic regions been preceded by the Acheulean and the latter by the Chellean. It does not follow, however, that such has been the case in South Africa, but the comparative scarcity of these cleaving-, in contradistinction to the digging-tools, is worth noticing.

THE TOOLS USED FOR MANUFACTURING THE BOUCHERS.

When the large palæoliths are made from a rounded boulder or large pebble, water-worn or otherwise, it is probable that a boulder of the same size, or perhaps heavier, was hurled against the one which it was intended to split in order to obtain by concussion the preliminary frag-

ments from the nuclei. The impact would, in many cases, result in the partial cleavage of both boulders, and of this there are manifest and numerous proofs in the Stellenbosch and Drakenstein deposits, where rounded boulders seem to have been exclusively used. The skill evinced in some of the rougher examples, as seen in Figs. 7, 8, 12, 15, 21 is, however, of such poor description that I am probably justified in postulating that paring tools other than any fragment or splinter of rock were not required for the purpose. But together with these roughly fabricated artefacts there are found, in situations pointing clearly to the same origin and to the same epoch, bouchers highly finished, although broadly faceted, and fully worked into a point (Figs. 1 to 4, &c., Pl. I.). For fashioning a split pebble into an amygdaloidal- or tongue-shaped implement, flaking and paring tools were necessary, and were evidently used; but so far, in the deposits of the two localities already mentioned (and I consider, for reasons to be given hereafter, that they are among the most ancient in South Africa), no evidence of these instruments has as yet been obtained. Nothing has been found to my knowledge resembling even the tools that might have served this purpose (*cf.* Pl. XI., Figs. 86-90), and which are known from other localities where bouchers have been found, as well as from places where they have not been met with.

All bouchers, however, have not been evolved from rounded boulders; some are made from fragments detached from large rock masses. To obtain the material required, correspondingly large hammers, which I may term detaching hammers, in the shape of Fig. 75 of Pl. XI., were used. Artefacts of this kind are now recorded from the neighbourhood of Cape Town, but I am by no means certain that the epoch when the detaching hammers were in vogue coincides with that of the Stellenbosch and Drakenstein deposits. There are occasionally found nuclei of the same shape as the detaching hammers, but with edges so numerous and sharp that it is plain that they are the residual nuclei or cores from which chips were detached, and not hammers; were it otherwise the edges would be abraded, which is not the case.

Quite lately there were discovered at Fishhook, Cape Colony, on the slope of a hill usually covered by a huge sand-dune, which had been temporarily removed by abnormally strong winds, quite a number of these extremely large detaching hammers plainly bearing marks of the use to which they had been put. They were associated with river-boulder palæoliths of a most ancient type, as well as with others that had been fashioned from non-rolled pebbles, but of equally ancient appearance. On a part of the wholly exposed floor those

detaching hammers had been deposited by gravitation, so as to form here and there irregular circles. The one shown in Fig. 75 of Pl. XI. is only of moderate size; some of those met with were more than twice as large. Were it not that the edges are so abraded, it might be possible to imagine that these stones had been cores as already stated, or perhaps missiles, in spite, or may be on account, of their weight, but together with these artefacts we found the fragment represented in Pl. XI., Fig. 84. Made of the same crystalline quartzite as the detaching hammers, a quartzite not found *in situ*, it shows plainly that it was detached from a rock surface by a very large tool of the style of those mentioned as detaching hammer. The reverse is flat and the fracture clean. The obverse is already pared on the upper side by the repeated blows of the detaching tools, somewhat in the manner claimed for the Mousterian of Europe.

On the Cape Flats, in the neighbourhood of Cape Town, there used to be exposed here and there outcrops of a close-grained cherty sandstone, or surface quartzite, and the grains of which, even when not closely set, are cemented together by silicious matter. Some of these outcrops were covered with large bosses and depressions due to the removal of large or moderate-sized fragments by percussion. Fragments of the same rock considerably too large for paring or trimming the somewhat delicate, small-sized tools found there in abundance were not uncommon in the neighbourhood of these outcrops, and they may also be considered as detaching hammers, but none of these seen by me was equal in size to those found at Fishhook. That the detaching hammers, possibly hurling stones as well, made of this surface quartzite were also used as cores seems to be proven by the find, also at Fishhook, of similar examples, together with large flaking tools, of the same material, one of which is figured in Plate XI., Fig. 90.

But as will be seen later on, the implements made of such material are comparatively recent.

CHAPTER IV.

WHAT WERE THE BOUCHERS USED FOR?

Let us endeavour now to realise the purpose which these artificially worked stones, which we are now terming "bouchers," were intended to serve.

Primitive man did not use his uncouth tools for exclusively one purpose. Had he done so, he would not have been primitive ; but it is generally assumed that the bouchers of large, or moderately large size, were held in the hand, and not hafted.

This admission holds good for the South African ones, and for reasons which have not, to my knowledge, been adduced for the European, Algerian, or others, and which I give here.

1. In all the examples of these artificially worked stones—be they of the more or less perfect tongue- or amygdaloidal-shape, as well as in many, if not most, of the cleaving tools of the *Stellenbosch* type—whenever they are worked on both sides, the sharp, median, uneven ridge of one face *never* corresponds with that of the other. The stability of a boucher inserted in a hollowed- or cleft-handle of horn or wood would be greatly impaired thereby in spite of thong attachments, or the use of gum-cement in the manner obtaining among the Australian aborigines—a manner which did also obtain in South Africa, but for smaller tools only, as will be seen hereafter.

Yet the thing is not impossible with bouchers of the Mousterian type, one face of which is the result of the cleavage, while the other is pared with the resulting median longitudinal ridge, because in these the flat face would add firmness to the hafting. This applies especially to the cleaving implements, but whereas the axes, Figs. 33, 34, 54, 55, 56, could not have been hafted easily, the same cannot be said of Figs. 47, 48, 49, 50, 51, 52, 53, 57, which represent cleavers or hand-wedges belonging to both the *Stellenbosch* and *Orange River* types.

One thing, however, is noticeable in these wedge-shaped tools, namely, that with extremely few exceptions, resulting from the mode of cleavage, the most bulging part, as shown in the profile of the figures here given, is the centre. Had these been hafted, a forcible impact would undoubtedly tend to dislodge them from the socket.

Another reason for assuming that the bouchers worked round the butt in a tongue-, or amygdaloidal-shape, were not hafted is that the edges are too sinuous to produce a clean cut (see Figs. 1, 2, 3, 4, 11, 29).

2. The bouchers in which the original rounded part of the boulder has been retained (Figs. 5 and 22), might have been used as hafted club-heads, the sharp end being inserted in a handle. But had this been done, this rounded part would show traces of abrasion. So far, however, only one such boucher from among the many which I examined has shown traces of wear at the rounded part, as if it had been used for pounding or smashing a hard object. Moreover, in many of the examples of this type, the sharply pointed apex shows signs of retrimming, and this leads me to conclude that the sharp end *and not the butt* was used.

That the same occurred also in the case of the tongue-, or amygdaloidal-shaped bouchers is proved by Figs. 16, 17, 18, 19, in which the transversely broken part would need fresh trimming to become serviceable again. Had they been hafted, that is to say had the sharp point been inserted first into a socket, the fracture would not have taken place where it did from the force of a blow, but more towards the middle, as happens for the Solutrian type lance-, or javelin-heads, of the Cape Flats (Figs. 110, 112, No. 1, 2, 3, 5, Pl. XIV.). The bouchers truncated in this manner thus give the impression that they broke at their weakest point while being used as picking or digging tools.

Figs. 5 and 6, Pl. I., represent hand-picks in which the rounded part of the nucleus has been retained as best suited for holding in the hand. It is wonderful how, even in an inexperienced hand, adaptation to this primitive instrument is demonstrable. Fig. 9 is that of an implement of the same type, but with a much broader end, specially suited for spade-work. It is too large, however, and too heavy (it weighs over 5 lbs.), not to have necessitated the use of both hands in using it. The same may be said of Fig. 20, the point of which shows very distinctly that in spite of its weight (9 lbs. 3 oz.) and size (33 cm. long by nearly 16 broad), it has been used as a digging instrument. Fig. 10 is especially instructive; no

longer amygdaloidal- or tongue-shaped, it is plainly curved. A point was what the maker wanted; this being obtained, he left untrimmed the remainder of the nucleus from which he fashioned it. This boucher weighs $3\frac{3}{4}$ lbs. In the same locality where I found it, I discovered several examples having the same peculiar bend. In Fig. 7 the apex is, in proportion to its size, as broad as in Fig. 9, and it is not easy to contend that this somewhat uncouth boucher could have been put to any other purpose than the one to which the indented point bears corroborative testimony, *i.e.*, digging. Moreover, the points of Figs. 5, 7, 9, 10 show marks of retrimming. Fig. 22 is the representation of a quadrangular implement somewhat unique in shape. Had its purpose been that of a hammer, pounder, or club-head, the butt or edges would show signs of wear, which they do not in the least, but the point has been retrimmed; moreover, in this particular case, the four sharp edges preclude the possibility of its being held in the hand as a club, except possibly in a case of emergency, but as a digging tool it would be most serviceable. In most of the examples pointed at each end, one of the ends shows more service than the other (Figs. 13, 15).

Oblong or ovoid implements, of which it is difficult to say which end is the butt or point, are extremely rare among the *Stellenbosch* type. Fig. 24 is an example. It is too large to have been a scraper, its edges are too sinuous to permit of it having been a cleaving tool. Moreover it is, like Fig. 18, made of a surface quartzite differing from the material used for the *Stellenbosch* type, and is certainly less ancient. But in the deposits of the *Orange River* type, especially the *Griqua* sub-type, these ovoid implements are occasionally found.

As already mentioned, the striking characteristic of the well-executed South African palæoliths is their huge size. We have in the collection, apart from these already quoted, many specimens weighing from $2\frac{1}{2}$ lbs. to 6 lbs., and the average of a boucher 20 cm. long is a little less than 3 lbs.

This great weight is also a strong argument against the likelihood of their having been hafted. They would have proved very unwieldy even to men of powerful physique.

But it does not follow that we have not in South Africa bouchers of moderate and also small dimensions, and comparable in that respect with those obtained elsewhere. Figs. 4, 18, 19, are good examples of some, although they are rare, but I know of others which are smaller still, and of as perfect a type as the best Acheu-

lean (Figs. 18, 76, 77, 79). Some were found in association with larger implements, others by themselves.

It is not unreasonable to suppose that they were made either by, or for the children, and possibly also for the women.

The singular implement, Fig. 23, Pl. III., is of a type that has been discovered hitherto in the Berg River Valley (Cape Colony) only. Three are known from Wellington, and I lately discovered two more at Simondium, where there is what I consider to be the oldest station yet found, lying together with some of the best finished and largest palæoliths it has been my good fortune to discover, as well as with still more numerous unfinished ones.

I think that the explanation corroborated by the figures here given makes it quite clear that the makers of these palæoliths fashioned at the same time two kinds of bouchers: a pick more or less sharply pointed at one end, and a cleaver or hand-wedge more or less broad at the cutting edge, both edge or point of which, in nearly all cases, show conspicuous marks of wear.

The hand-picks do not, however, imply agricultural pursuits in the sense of crop-growing.

Man of the Middle Pleistocene was small, about five feet in height. It is hardly probable that he trusted either singly or collectively to his strength alone to attack or repel the *feræ naturæ* that threatened his existence, or to capture those that were necessary for his sustenance. Probably armed with a heavy club, he entrapped the game required for his food and clothing, and this he did by snares or pits.

If the original maker of these South African bouchers, which are almost identical with the European, is, as I really believe, the ancestor or descendant of the negroid race that left traces of its industry and culture in Southern and perhaps also in Central Europe, then the use of these implements, whether made of quartzite or of flint, is now explained. Either he imported into Europe the methods to which he has long been accustomed in Africa for trapping and securing the produce of the chase; or, if he is not the native of this country, he brought to Africa, during his long peregrinations, to the further progress of which the *Ultima Thule* of the South put an insuperable obstacle, methods borrowed from those people whom he has encountered and from whom he has borrowed.

We know that until lately drives, leading to pits and trenches garnished with pointed stakes at the bottom, were used in South Africa for securing game. In the Humansdorp District of the Cape

Colony there is a narrow gorge in which game-pits and stakes in very good state of preservation are still to be found.*

This is clearly a case of survival of methods. Primitive man, or the early South African aboriginal, lived on game, followed game, and entrapped and snared it in the same manner as the present aborigines did until a few years ago. But unacquainted with the use or making of iron, as he undoubtedly was, how could the pits be dug but with the stone picks or spades; how were the stakes cut and sharpened for impaling the game at the bottom of the trenches, or for palisading the enclosures for the drives, but with the stone picks or stone axes mentioned? And as for the hypothesis that his weapon was a club, the survival of type seems to me to be also borne out by the discovery of such an implement in a rock shelter that had been partially filled with bat's dung (*cf.* Pl. XIX., Fig. 152). Made of an extremely hard and heavy wood (*Olea* sp.) it is plainly fashioned with stone tools (scraper-knives). It is shaped as a phallus, the handle has been trimmed so as to make prehension by a small hand more effective. With it was found a stone bead (Pl. XVI., Cut 3 of Fig. 186); also a small cube of iron pyrites. At the entrance of the shelter there are still traces of bush paintings, and it is not out of place to remind the reader that in the gorge at Humansdorp, where the game traps are preserved, there occurs a rock engraving, painted with red ochre.†

Let us assume that primitive man originated in Africa. When he invades Europe in the Chellean times, the climate is attractive; he brings with him his primitive weapons, the weapons of the chase, defence or offence. Are the *feræ naturæ* which he has to encounter such formidable and unknown beasts as to daunt his courage? Certainly not. *Hyæna spelæa* he knows well, it is the present *H. crocuta*, found only in South and Central Africa; *Hyæna brunnea*, occurring now from Senegal to South Africa, he also knows well. The tooth-sabred-tiger or the cavern lion could have for him no more terror than his old acquaintance *Felis leo* or *Felis pardus*, the present lion and leopard which, besides, he meets again in that country new to him. Is he frightened by *Elephas antiquus*? No, it is his old acquaintance, now called *E. africanus*. *Hippopotamus major* is his old friend *H. amphibius*; *Rhinoceros mercki* he cannot distinguish from

* Péringuey, "Rock Engravings of Animals, &c.," Trans. S.A. Phil. Soc., xviii., 1909, p. 417.

† But these facts are instanced here merely as cases of survival. It does not in the least follow—in fact, it is to me, at least, certain that neither the club nor the bead here mentioned have any connection whatever with the Chellean-Mousterian boucher industry.

R. simus, *R. bicornis*, or *R. keitloa*. No such niceties in identification for him. He either defends himself against them, or uses his growing cunning in mastering them, especially the formidable cavern bear *Ursus spelæus*, which he has not met before. He finds no longer the numerous antelopes of his acquaintance it is true, but *Bos bison* has the same attraction for him who has slain *Bubalus bairdi* or *B. antiquus*. It is quite possible that he has not known these denizens of an intensely cold climate, the woolly rhinoceros, the mammoth, the reindeer. He would follow the animals which he knew, beasts driven back by cold to receding warmer climes—to climes where, as in South Africa, the total absence of traces of pleistocene ice-age clearly proves that there did not exist at the time the increasing rigour of the elements that has come to prevail in the country whence he retreats, either following the migration of the game on which he subsists or migrating to where it is found still.

And if he is not of African origin, if he is of the Neanderthal-Chapelle race, but, unlike the latter, has not been able to accommodate himself to the new climatic conditions, then in his retreat southward, and especially to the African continent, he probably accompanies or comes across there most of his old acquaintances; if not all, many of them, *i.e.*, the hippopotamus, the elephant, the hyænas. He finds himself among antelopes which he did not know, but horses which he knew. The hyænas follow him, for is he not providing crumbs for them? He continues the application of methods which he has perfected elsewhere. In his emigration southwards, where he no longer finds the flint nodule so easily worked into implements, he resorts to any stone hard enough to ensure its object; hence the use of quartzite, hence also the discrepancy in technique, more apparent than real, since ultimately the “knapping” becomes as perfect as that of the best flint. But the primary use for which the new material implements are made is the same. They are intended to be used as picks or spades for digging trenches, cleavers to cut stakes or palisades, and, as will be seen in the next chapter, the manufacture of other tools for domestic use here accompanies or follows that of the bouchers, if it has not preceded it.

CHAPTER V.

WERE TOOLS OTHER THAN BOUCHERS MANUFACTURED BY THE
MAKERS OF PALEOLITHS ?

It remains a moot question whether or not the Chellean boucher, which so many of ours resemble, was the only manufactured implement of that period, leaving out of account the flakes or chips that resulted from the paring of the same—the by-product, so to say, of this lithic industry; a by-product which is very rarely associated both in Europe, and in many cases here also, with the finished or unfinished tool.

It is, however, safe to conclude that in the case of the Chellean era the bi-facial boucher was the predominating, but not the exclusive tool. On the other hand, the Acheulean type is often found together with the Mousterian, and with the latter's concomitants of "points," "scrapers," "graving tools," &c.

In the chapter dealing with the process of manufacture of the South African palæoliths I have gone into details which seem to show that on the shape of the first fracture of the pebble the ultimate object, cleaver or pick, probably depended. But although the forcible impact of a boulder, or of a large pebble against another, was the preliminary step for fashioning the tool, smaller stones more appropriate to the purpose, such as minor fabricating tools, would be required to give, when desired, to a boucher of the type of Figs. 1 to 4, Pl. I., these finishing touches, such as facet-flaking or edge-paring, which so clearly imply that a sense of esthetics prevailed over that of mere utility with some at least of the primitive makers.

FLAKERS, PARING TOOLS.

The two first-mentioned tools are seldom found in South Africa with the completed objects. Finishing tools they may be called where the Chellean- or Acheulean-type bouchers are concerned, fabricators where the comparatively thin, lanciform, lamellate scraper

knives are produced. Figs. 86 to 92, Pl. XI., give a general aspect of their shape. Figs. 87 and 88 are tools proved to have been used for facetting and edge-trimming by the situation in which they were discovered. Made of ferruginous banded jasper, Fig. 89 was found together with highly finished bouchers and flakes of the banded jasper of the *Griqua* sub-type, and so are others which, made of different rock, have the same general appearance.

The Tyumi Deposit.—Fig. 87 deserves more than a passing mention. It was found with three of four similar ones embedded deeply in the banks of the river Tyumi, in the Victoria East District, Cape Colony.*

With it was found a number of implements made of the same material (banded jasper), among which a long, oblong pick of the style of Fig. 43, but narrower, as well as pieces of the most finished Acheulean type I have as yet met with here (Figs. 76, 77, 85).

There were also knife-scrapers (Cut 4 of Fig. 131), nearly as well finished as the implements not uncommonly found in the neighbourhood of Cape Town. Others were of the type and size of those of Fig. 105 (from Nooitgedacht), one, especially, being almost the replica of Cut 7. There were also found lydianite scrapers, one of which (Fig. 124) shows the same workmanship as the bottle-glass example (Fig. 129, Pl. XVI.).

No other conclusion can be come to than that all these implements, bouchers, flakers, scrapers, rude or well finished, uniting as they do most of the forms met with in South Africa, except the typically crude, large bouchers of the Chellean type, are coeval, and that they have been manufactured by the same people.

They are also evidence of an advance in culture, especially in so far as the digging tools are concerned; but it must not be forgotten that equally finished ones made of a less easily worked material are also known from deposits that are undoubtedly older (*cf.* Figs. 1, 2, 4, &c.). At any rate, it is proved in this case that the makers of the bouchers did at the same time manufacture implements superior in technique to the mere scraper-knife.

But no flaking tool having some resemblance to Figs. 91, 92, 97 Pl. XII., was discovered in this Tyumi River deposit.

These laminate, more or less lanceolate tools, which probably served also, at a push, as knives or scrapers, in spite of their irregularly dented edges, are met with lying on the surface or under a depth of soil; they are found solitary, but oftener than not they

* This deposit was discovered by Mr. A. Johns, who presented several examples to the Museum. The district is perhaps better known as "Alice."

occur together with other and smaller products of a lithic industry of a doubtful date or period.

As far as my experience goes, they have seldom been found in a situation which incontrovertibly proves them to have been associated with bouchers of the old-fashioned Chellean type.

They all bear marks of use. Some are so weathered that the faces are partly disintegrated. Fig. 102, Pl. XII., is from East London, Cape Colony; Fig. 103 from Douglas, also in the Cape Colony—localities far remote.

They are each made from an igneous rock that would, from its texture, become more pitted after an equally prolonged exposure than, for instance, the lydianite tools (Figs. 88, 91, 92, 97), but the abrading process in these two examples, although probably due to dissimilar actions, has resulted in the same worn appearance. Fig. 102 is from the banks of the Buffalo River, East London (Cape Colony), and is one of the few for which a connection with a river terrace may perhaps be claimed. The under surface has become quite granulate; the upper is considerably pitted. Fig. 103, found under a shallow layer of soil, if not actually on the open, is even more worn or pitted than Fig. 102.

We possess from the cave-shelters of Knysna (Rob Berg) a lanciform implement of quartzite, exhibiting traces of weathering equal to that of these two examples.

Worked on one side only, and always without any traces of secondary trimming, most of the lamellate tools were originally flakes produced in the shaping of a large tool, as the convex under-face shows; and it is most probably by means of these flakes turned into flakers that the spokeshave-like scraper-knives seen in Figs. 88, 89, 100 were detached from the nuclei. This curious bend or curve plainly indicates that the flakes were obtained by percussion from an already convex or naturally rounded boulder.

But, whereas the very great age of flakers similar to Figs. 102 and 103 cannot for a moment be doubted, while that of Figs. 91, 92, 93, 97, owing to their well-preserved appearance, remains doubtful, the same cannot be said of Figs. 90 or 91, Pl. XI. Made of a surface quartzite that seems to be restricted to the western part of the Cape Colony, from Cape Town to Namaqualand, they are connected with implements of small or moderate size, some of which are the nearest approach to a Solutrian type as yet discovered in South Africa (Figs. 110 to 111, Pl. XIV.), and with others which are of very recent date, comparatively, as will be explained.

Yet, the primitiveness of these fabricators is about equal to that

of similar tools for which a degree or character of great antiquity may justly be claimed.

One thing, however, we may consider as established. It was by means of flaking or paring tools of the kind here figured, whether very ancient or comparatively modern, that the cutting, scraping, even sawing tools, with edges either worn or as sharp as if they were made yesterday, were obtained or produced. With extremely rare exceptions, and these possibly accidental, they show at the base, on the reverse side, a conchoidal fracture so bulging, or they are so incurved as to preclude even in the most lanciform examples the possibility of their having been firmly hafted.

We must regard most of them also as having been detached from the nuclei merely for obtaining a cutting tool, a tool that could be discarded at will—one that often served a momentary want, and on which much care would not be bestowed.* Their extreme abundance seems to justify this hypothesis.

The Nooitgedacht Deposit.—Although standing alone, the Tyumi River deposit shows so clearly the connection of small or moderately sized scraper-knives, with and without secondary trimming, with bouchers of large and moderate sizes, but of an advanced type, that their contemporaneity cannot be challenged.

We owe, however, to Miss Wilman, of the Kimberley Museum, a discovery of a similar nature as that of the Tyumi, only that the scraper-knives are very primitive and the bouchers still more so. This lady investigated in the dry diamond diggings of Griqualand West, at a place called Nooitgedacht, on the Vaal River, a deposit containing a great number of bouchers of both the digging or cleaving forms. Some are extremely large, others are of more than moderate size, but all are so worn and polished by water (no other agency could have produced such a smooth surface) that they have returned in many cases to their original state of pebbles. They very much resemble the implements in Pl. IX., Figs. 57 to 61, but are still more polished, or in a more deformed condition.

Intermingled in great quantity, and worn as smooth as the

* Mr. Redmond Orpen told me some years ago how, when in company with his uncle, C. Sirr Orpen, a buck was shot in Griqualand West, but when they came to disembowel it, so as to make it lighter to carry to the waggon, they found that no one had a knife. Undaunted by the untoward circumstance, the native who accompanied them, and whose race is doubtful, knocked together two pieces of stone, and produced from them an implement sharp enough to cut the animal open. This anecdote is also found in Stow's "Native Races of South Africa," but I had it before the publication of that book.

bouchers themselves, were found scraper-knives, from which I have selected for illustration seven examples (Fig. 105, Pl. XII.).

It will be seen from these figures that the outline corresponds with that of almost all implements of this nature which one meets with in South Africa.

Many of these flakes or scraper-knives are too small to have been the original splinters detached in trimming the bouchers, judging from the evidence afforded by the Stellenbosch type, and they must thus have been shaped intentionally, probably from a small nucleus; they were, therefore, not mere accessories.

The great age of this Nooitgedacht deposit is not, however, proved, but in what I consider to be the oldest, *i.e.*, Cape, Drakenstein, Stellenbosch, these scraper-knives are indeed very rare, yet I know of some that seem to have been trimmed intentionally into shape; such a one is Fig. 93, Pl. XII. This lanciform implement could not, as in the majority of cases, have been hafted on account of the bulging butt-end. The intention of paring this flake into a more serviceable tool than the mere accessory flakes (Figs. 94 and 95), found in the same locality, is apparent. At Simondium I found a scraper (Fig. 96), the shape of which does not appear to be accidental; the bulb of concussion is very strong. I have also seen from there two smaller ones shaped alike but not connected with the large bouchers, and belonging to the more recent type.

Near the mouth of the river Nahoon, not far from East London, Mr. J. Wood has found and sent me some very large, crude bouchers made of different Karroo rocks. They were found exposed, together with a very large number of chips of the usual flat, flake-form.

But the absence or rarity of these lanciform blades, flaking or paring hammers, or of scraper-knives among the worked or partly worked bouchers, wherever the deposits are found on the talus of mountains or on the mamelons left in the erosion of valleys, does not in the least imply that bouchers alone were manufactured in the original situation in which they were made. Their absence is explained by the removal of the flakes, owing to their lighter weight, occasioned by the same denuding agents to which, however, the very much greater size and bulk of the bouchers, cores, or detaching hammers offered a greater resistance—a physical resistance that made their downward progress very slow in comparison with that of the flakes. But they would ultimately reach either a flat terrace which greatly impeded their downward course, as at Bosman's Crossing, or a pot-hole, as seems

to have been the case at Nooitgedacht; and thus all these implements, large or small, would be found lying pell-mell.

IMPLEMENTS OTHER THAN FLAKES OR SCRAPER-KNIVES.

In South Africa, however, we have now proofs that the lithic industry was not confined solely to the production of digging or cleaving tools and their accessories, the flakes that ultimately became scraper-knives.

In these deposits or "stations" one meets occasionally with flaked stones faceted in the manner of Figs. 78 and 79, Pl. XI. These might at first sight be taken for nuclei from which short, narrow flakes had been detached by percussion in the manner of Fig. 139, Pl. XVIII., in which case the makers knew already how to utilise the "pigmy" tools as burins, or ostrich egg-shell beads parers, perhaps also for heading arrows. But the character of the Table Mountain sandstone, or other quartzite rock of which these pseudo nuclei consist, precludes the possibility of these splinters having been used for that purpose; the texture is not sufficiently fine-grained or compact for obtaining a very sharp edge, nor would it be resistant enough. These stones might, on the other hand, be taken for small hammers used for retouching or retrimming, but there is no sign of secondary trimming of the kind that could be produced by them on the implements with which these nuclei-like artefacts are associated, and, moreover, the edges of the fractures are always extremely sharp, which would not be possible had these come into forcible contact with another stone of the same material as themselves. Most likely these stones were missiles for hand-throwing, and possibly, also, sling stones.

They vary in size, but none is as large as the detaching hammers which they resemble except for their irregularly polygonal shape. The evolution of the hand-throwing stone into the sling-stone is easily conceivable; both were intended as missiles, primarily for defence, and probably at a later stage for attack.

In addition to these polygonal or core-like implements, plainly artefacts, there have been found, especially in the south-western deposits of the Cape, but also in Vereeniging, Prieska, and the "dry diggings" of the Vaal River, rounded, seemingly water-worn pebbles, which one hesitates to say are artefacts, whereas in others the doubt is not possible. These latter have one or more smooth, flat, or slightly convex facets, the abraded planes of which, when the stone is multi-faceted, never correspond with those of another (Figs. 80 to 83, Pl. XI.). These facets are,

moreover, so small that they preclude the possibility of the stones having been used as pounders or mullers after the manner of those of the recent period, such as Figs. 168 and 170, Pl. XXIII. No mortar or quern has been as yet found in these deposits. There is also no justification for seeing in them the precursors of the rounded or flat stones perforated in the centre and called “! kwè” (Figs. 152 to 160, Pls. XX.–XXI.).

Doubtless these rounded pebbles (Figs. 80, 81, 82, 83, Pl. XI.) owe their shape wholly or in part to physical agents, such as the displacement and friction of boulders caused by the torrential river-flows that, in the majority of cases, form in South Africa the short rivers or streams which, well-nigh dry most of the time, become impetuous torrents at others.

One such pebble, tri-faceted, I found in the temporarily dry bed of the Eerste River (Cape Colony) among large water-worn boulders which in time of flood are hurled against each other with such force as to produce a deep rumbling noise heard from afar, in the same manner as in many of the Pyrenean “gaves.” This action would easily suffice to grind facets into a small, already rounded pebble falling between revolving masses of considerable size. But it is, indeed, seldom in such a situation that these rounded stones are found. They are met with in the Drakenstein, Paarl, Stellenbosch, and neighbouring valleys, and invariably with boulders of large size, on the hills or talus slopes, often at great heights. It is probable that if no more have been recorded outside the region of Table Mountain Sandstone, and of the Vaal River deposits, it is because they were considered to be natural products, not artefacts. While some of them are fairly well preserved and patinated (Figs. 81, 82, 83, Pl. XI.), others are partially disintegrated, and this, curiously enough, round the facets.

Fig. 80 is peculiarly instructive in that respect. At the two extremities are two facets not quite concordant, and of the size of a shilling and a sixpenny-piece respectively; both retain the glaze or patina of the original surface, while the rest of the periphery is disintegrated to the depth of from 2 to 3 mm. This example I found at Simondium at a height of 300 feet above the level of the river draining the valley, which is some 3 miles away as the crow flies. It was lying among huge boulders, all showing more disintegration than any I have as yet met with.* This partial

* At the time of my visit these implements had just been dug out in making a plantation. The constituents of the soil in which they were embedded, entirely void of lime and containing very little potash, could not have acted as potent

disintegration is not restricted to that one rounded stone, for we have in the collection others showing more or less evidence of a great age.

In some of the best preserved the shape of the facets would seem to imply that these stones have been used as small grinders or mullers (Figs. 82, 83), only that the facets are slightly concave, or deeper in the centre than at the edges, and differ in this respect from the neolithic mullers figured in Pl. XXIII.

There is no reason for disbelieving that the primitive people who made the palæoliths availed themselves of these objects primarily fashioned partially, if not completely, by natural agencies with a view either to improve on them (*cf.* Fig. 23, Pl. III.), or of making use of them as they were. The missile hypothesis seems to be strengthened by a recent find in one of the numerous Stellenbosch-valley deposits of an almost orbicular quartzite stone of moderate size, with a very small depression on one side either artificial or more probably left from the original contour, and of another larger spherical one made from milky-vein quartz bearing unmistakable traces of artificial working. I discovered similar ones several years ago, but I rejected them at the time as being doubtful artefacts.*

These rounded or polygonal stones are not restricted, as I have already stated, to the Cape, Stellenbosch, and Drakenstein deposits.

In those of the Vaal River, rounded stones of a similar facies but not facettèd are found. They are often difficult to distinguish from naturally rounded ones. A small specimen in our Collection, from Waldeck's Plant on the Vaal River diggings, bears, however, marks of usage in the shape of a small artificial dent, or rather depression.

At Vereeniging (Transvaal) these implements are of the same type as those from Stellenbosch or Drakenstein, and are made of quartzite or dolerite. In some, the facets correspond more or less on each side; the edges of the depressions or facets are usually sharp, while in other examples they are smoothed and partly obliterated.†

But to whatever use these rounded stones may have been put, factors in the disintegration of sandstone implements all plainly made from rounded water-worn boulders, selected because their texture was denser or more compact. This lack of potentiality in the chemical agents of the soil leads to the conclusion that this partial disintegration is due to an extremely ancient age.

* I found no less than five such rounded stones in a clay-pit of great depth, and only half a mile from the spot where the two examples here mentioned were dug out.

† I am greatly indebted to Mr. T. N. Leslie, of Vereeniging, who discovered that deposit, for loaning me the typical specimens for identification, comparison, and reproduction. Mr. J. P. Johnson subsequently described and figured some of these implements (*Trans. S. Afric. Phil. Soc.*, xvi., pt. 2, 1905).

and that of brayer is quite likely, one important point is now established, namely, that in parts of South Africa, very far distant from each other, balls of sandstone, quartz, or dolerite have been found together with bouchers of undoubtedly palæolithic shape.

The importance of their occurrence here is enhanced by the fact that in the "Grotte de l'Ours," in France, balls of sandstone, of calcareous stone, and of flint have been found together with Mousterian domestic utensils (mobilier), which include amygdaloidal Acheulean bouchers, Mousterian points, burins or graving tools, borers, &c.* Similar discoveries were made in the "Grotte de l'Hyène," on a distinct Mousterian level, as well as in the "Quina" deposit of the Reindeer period, *i.e.*, Magdalenian, &c.†

These discoveries, viewed in connection with ours, are of extreme importance. Better than the bouchers, so many of which are of the Mousterian facies,‡ better than the flakers, scraper-knives—themselves types of great survival—these nuclei-like, and especially these partly facettèd or rounded stones, justify us in connecting the older lithic industry of South Africa with a Mousterian culture—a culture which is not restricted to the manufacture of large cleaving- or digging-stone tools.

FLAKES AND SCRAPER-KNIVES.

Had we to deal only with the more or less almond-shaped, or with partially tongue-shaped tools, or even the rougher implements that served an identical purpose, doubt would not be permissible, and the South African implements of that type might, with safety, be considered as belonging to the Chelleo-Mousterian, and even to correspond in age.

But the presence of flakes, mostly, but not necessarily always, arge, greatly complicates matters, because their fabrication and use are continued until a time which is here practically that of yesterday. This may be due to their useful primitiveness.

That these scraper-knives were originally evolved from spalls resulting from the preliminary trimming of the bouchers no one

* *Cf.*, Chauvet, "Stations Quaternaires";—Parat, "La Grotte de l'Ours," &c.

† The quartzite bouchers of the Pyrenean region, which so greatly resemble those occurring here, possibly on account of the difficulty they offer to trimming, are connected by Déchelette with Acheulean and Mousterian periods.

‡ The Mentone caves as well as the Taulbagh deposit have demonstrated the fact that in the early quaternary period (pleistocene), there were to be found primitive implements resembling more the Mousterian than the typical Chellean or Acheulean "coup de poing."

can deny who looks at the representations of some of them given in Pl. XII. Figs. 97 to 100 are particularly instructive.

There can be no doubt, also, that from their appearance and situation many of these tools, flakers, scrapers, or knives, are to be considered as old as some of the bouchers.

A fragment of scraper absolutely similar to, and of the same composition as, the Cuts in Fig. 104, was found embedded in a raised beach situated some 3 miles, as the crow flies, from the present sea-coast. It is identical with the large flakes found together with large bouchers at, or close to, Cape St. Blaize—a locality not far removed from the raised beach alluded to.

A point of importance is that none of these knives or scrapers that from their position might be considered ancient, moderately ancient, or very ancient, exhibits traces of paring on the reverse side, and in that respect these flakes are doubtless Mousterian in shape. But the question naturally arises: why did these flakes not follow here, and also elsewhere, the same evolution in technique as the bi-facial bouchers with which many are in South Africa undoubtedly contemporaneous, and produced by the same artisans?

Being coeval with the boucher, it seems natural that the paring of either face of the flake or spall into a lance- or javelin-head, or a hand-throwing spear, should have of necessity followed, as it has elsewhere, but such has not been the case either in the South African palæolithic type or in the neolithic.

It is therefore almost certain that the South African maker of palæolithic stone implements, as well as the aboriginal who fabricated the neolithic, were ignorant, with a few exceptions to be mentioned hereafter, of the method of stone lance-head manufacture, the use of which weapon would in itself denote great bravery. But the neolithic maker, unlike the Magdalenian hunter with whose culture his has so many analogous points, is well acquainted with the bow, and arrow tipped with very small chips, the minuteness of which implies of necessity the use of poison. Craft *versus* brute strength.

The failure of the evolution of the flake into a lance-head pared on each side in the Solutrian style may, however, be explained by the process of trimming the pebble. This trimming of a boulder in most cases already naturally rounded, into a more or less amygdaloidal shape, is the natural result of artificial concussion or impact, as I have endeavoured to show in Chapter III., and the boucher is therefore *older* in date than the flake.

But in many instances it is impossible to assert that a scraper-knife

is more ancient than another, or belongs to a different type; and as indications of its age, we can only be guided by the site or position in which it is met with—indications which are far from being conclusive evidence.

I have endeavoured to figure all the types in our Collection. Illustrations of implements of that kind give a better idea than descriptions.

All the figures of Pl. XII. I consider to belong to the palæolithic type. Many of them were found where bouchers occur. I have explained their shape in a former chapter. In Pl. XIII. all the Cuts of Fig. 104 may be said to be also of a very old type, but with the exception of Cuts 7 and 12 they were not found in connection with bouchers, although these palæoliths occur in the same district. Cuts 1, 2, 5, and 8 are from cave-shelters on the littoral. Cut 6, also from Knysna, has been hacked into a sawing tool. It bears at the base a dent that looks like a notch—a rare occurrence which, however, must be looked upon as accidental. Cuts 7 and 8 have traces of a similar one, and so has Fig. 101 of Pl. XII., in which the dent is not well shown.

The Cuts of Fig. 105, Pl. XIII., represent scrapers found together with the bouchers in the Nooitgedacht deposit of the Vaal River. As much worn and polished as the large palæoliths not only of that particular deposit, but also of others found on the surface (Pl. IX., Figs. 57 to 61), their shape is indistinguishable from that of Figs. 106, 107, Pl. XIII., found in the Karroo and the Cape Flats respectively, and which may be said to be of yesterday's date. Cut 3 of Fig. 105 and Fig. 108 are, however, somewhat out of the common, because the base seems to have been trimmed into a wedge-like shape, as if they were intended for tipping a lance, but on close observation it will be noticed that in Cut 3 the thinned reduced part is too short to allow of hafting, but Cut 1 of Fig. 108 *could* have been hafted.

We find also among relics of that old type a few, very few, tools with a peduncle. This "tang" was intentionally produced, doubtless, in Cut 2 of Fig. 108, which, like Cut 3 of Fig. 105 and Fig. 108, is from the Kimberley District, Cape Colony. Doubt is permissible for Cuts 1 and 2 of Fig. 109, both from the Vereeniging deposit.

But from a neolithic situation we have Figs. 125 from Queen's Town, Cape Colony, in which the "tang" is undoubtedly intentionally produced, and Mr. Cottell found at Cradock two examples with a somewhat similar peduncle, of which he sent me a sketch. These were subsequently figured by Mr. J. P. Johnson.

Figs. 119, 121, and 122 represent the chalcedony implements of the neighbourhood of Victoria Falls. The technique is the same as in many of the Cape Flats type as represented in Figs. 118 and 120.

Cuts of Figs. 135, which are stone implements found in the Matoppo caves, where paintings occur, are the very counterpart in size and shape of quartzite scrapers discovered at the foot of the Paarl Rock in the Cape Colony, which show traces of enormously long exposure.

From the examples given it is seen that the shape or style of paring the scraper-knives or fabricators cannot give a clue to their respective age or to their relation to each other. Nor is the size of the flakes an indication. Some of the Victoria Falls chalcedony implements are certainly as small as many of our Cape-Flats and inland districts neoliths, with the exception of some of the "pygmies," and it may be said that flakes of sandstone or banded jasper are, as a rule, larger than those of silicious or partly silicious rocks.

Negative, however, as the results of comparison between flake-knives or scrapers, undoubtedly very ancient, and equally undoubtedly recent, are, we have fortunately evidence of another kind which throws light, of a sort, on the progress or regression of the lithic industry in South Africa.

We have examples of a solutrian type in the shape of lance- or javelin-heads, chipped on each side, and laurel- or willow-leaf shaped (Figs. 110, 112); of aurignacian-solutrian-type scrapers with plain, secondary trimming of edges, either at one end (Figs. 123, 128) or even all round (Cuts 1 and 2 of Fig. 131).

We have also tardenosian pygmies (Figs. 140, 141, 143), polished tools, and arrow-heads with tangs (Figs. 116, 117), as well as a bone- and a stone-culture commingled. But this evidence, for reasons which will be duly explained, I include in the South African neolithic.

This digression into the neolithic period is here necessary for the proper comprehension of the finds in the various deposits which, rightly or wrongly, I assimilate to the chelleo-mousterian of Europe.

CHAPTER VI.

‘AN ACCOUNT OF THE “STATIONS.”’

In order that my conclusions regarding the South African Palæolithic Age should be tested eventually, I am giving here an account of the main deposits.

This account will, of course, contain repetitions of some of the points dealt with in the previous chapters, but it is to be regarded as the documentary evidence on which my explanation of the Palæolithic and Neolithic Ages in South Africa is based.

THE DEPOSITS OF PAARL, SIMONDIUM, STELLENBOSCH, &C.

The first find in the neighbourhood of Cape Town of very large-sized quartzite palæoliths was made on the Koeberg Road by the Honourable W. F. Lyttelton in 1880. The implement found is of the rare ovoid-discoidal shape, and is represented in Pl. III., Fig. 24.

The second was met with in the streets of Paarl, Cape Colony, which are coated with what is here called “gravel,” and thought at the time to be laterite, but now considered as a coarse ironstone. On visiting the quarry whence the gravel was extracted, I found several palæoliths of very large size. In the centre of the ironstone deposit was a huge block of the same material, too compact to be easily broken, and from one of the median faces projected a large palæolithic boucher, which I could not detach without fracture. Some 400 or 500 yards away on the higher slope of the hill, and about $1\frac{1}{2}$ or 2 miles from the Breede River, a piece of ground had been “delved” for establishing a new vineyard. Alongside were two heaps of palæoliths and nuclei, thrown aside by the workmen. From one of these I selected the implement, Fig. 22 of Pl. III., and others. Not a single scraper or small spall was to be had. These palæoliths and nuclei were found at a depth of $2\frac{1}{2}$ or 3 feet—the depth of the “delving.”

I could not continue my investigations at a higher level, as no new ground was put under cultivation that could reveal the extent of the lithic deposit.

The importance attaching to this deposit is that quartzite does not occur in the locality, only granite. The water-worn quartzite boulders have therefore been originally brought from the river to their high, commanding position—a position doubtless more elevated than the spot where they were found. That they had gravitated there is not a mere assumption, because on the top of the mountain, at the foot of these large granitic bosses, after one of which the Paarl* is named, there were ultimately found scraper-flakes of quartzite as worn as any I ever saw, and this in a place which not only surmounts the "Factory Site" where I found the palæoliths, but where also quartzite is not a local rock.

The Simondium "Station" presents the same feature as that of the Lower Paarl, and the sketch here given will make the recital more easily understood. The "Station" is situated on a somewhat abrupt talus of Simonsberg on the Drakenstein valley side. On the very steep slope of "Pontac Hill," near the dwelling-house, on the Pomona Estate, an extremely large number of artificially worked stones had been exposed by cultivation on what is a saddle of moderate width sloping on one side towards "Donkerhoek," and "Pomona" on the other. A narrow, sinuous "nullah" had been eroded to a depth of 10 or 12 feet. At a depth of some 9 feet I espied on one of the sides the projecting butt-end of a boucher which proved to be one of the finest I ever obtained. On the surface, exposed by digging or ploughing, and almost in a line with the first embedded boucher, I picked one of the heaviest "hache à talon" I have yet found. The two had plainly gravitated from a higher altitude, as others had done, which lying on the surface were, either spall-like, partly manufactured, or nuclei—and what cores! some more than 18 inches in length—littering the ground. I traced a number of these palæoliths for nearly a mile along the ascending talus up to 550 feet above sea-level (see cross-dotted scheme in sketch). At that height, also, the implement had been exposed by delving the ground for a plantation, and there is no reason to disbelieve that, were cultivation to be carried higher on this mountain talus, palæoliths would be revealed. It is at the higher altitude that two implements like Fig. 23 of Pl. III. were found, and some of the bouchers were almost in a state of disintegration. A search at a lower level led to the discovery of other palæoliths deeply imbedded in stone-gravel in cuttings on each side of the Simondium Railway Station, 370 feet above sea-level, and about

* Corruption of the French word *perle*, given it by the French Hugueno settlers.

2 miles from the Berg River, which runs there at an approximate altitude of 300 feet. I doubt not that a renewed search will lead to the discovery of these palæoliths close to or in the proximity of the riverbanks. This Simondium deposit as now traced extends

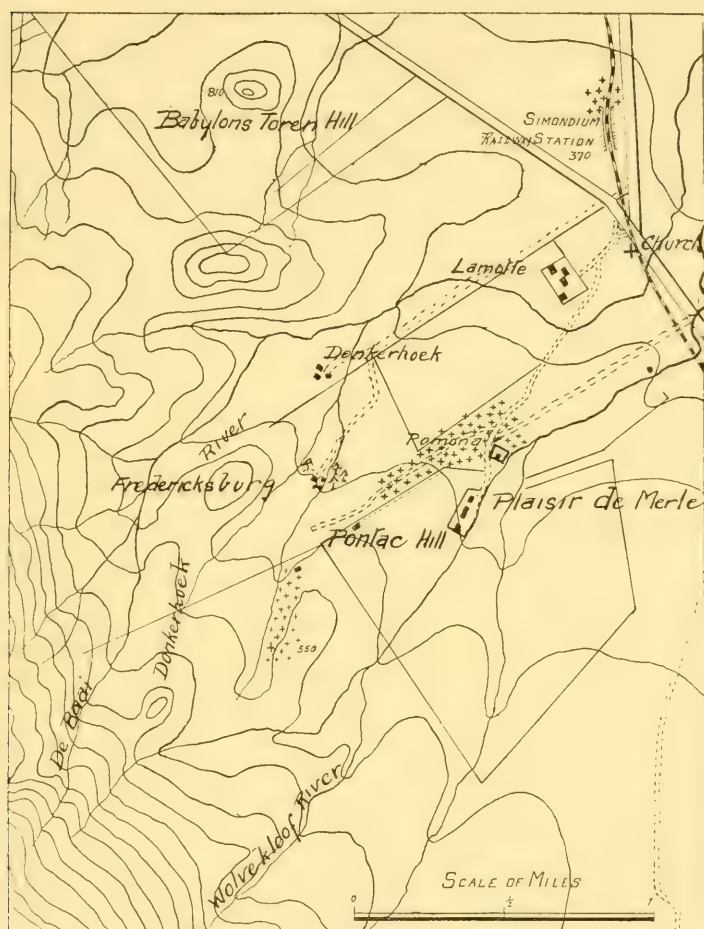


FIG. 1.—Simondium Factory Site.

for nearly 2 miles on a steep slope. Hitherto I have found there no undoubted scraper-knives; only large unused flakes, large spalls, and large nuclei. It is possible that flake-knives were once there and utilised as such, but one thing can be definitely said, and that is, that they are no longer found with the finished, partly

pared or unfinished palæoliths exposed on the surface or found at shallow depth.

Another point which this Simondium deposit has in common with that of the Paarl, *which is nearly on the same level*, is the selection by the makers of such a high position for their workshop or abode. Was the river that drains the valley nearer than it is now?

The great thickness of the iron-gravel at the Simondium Railway Station, in which some of the implements were found, has, like the large block of iron-stone at the Paarl, taken a very long time to accumulate. In that deposit, while forming, the stone implements, artefacts already of great antiquity, have gravitated, following the course of hill denudation and valley formation.

And this occurrence is repeated wherever the Stellenbosch-type quartzite boucher is found. Look for it in iron-gravel or below it, when not very thick, and you will find it there as often as in alluvium or silt, perhaps because it was arrested in its downward course by the formation of conglomerate.

Stellenbosch Station.

At Bosman's Crossing, near Stellenbosch, the occurrence of these palæoliths is somewhat different.

At the foot of a steep hill called Papagaiberg runs a small rivulet, a tributary of the Eerste River, which it joins close by. The spur of that hill abuts on that rivulet, and is intersected on one side by a cart-road and a railway cutting on the other. The space thus left has been used for a good many years as a brick-field, from which a thickness of some 20 feet or more of material has been removed. I found there in the vertical wall, from which the clay was detached by pickaxe, two superposed layers of fractured, water-worn boulders, spalls, nuclei, finished bouchers, such as Figs. 2 and 4 of Pl. I., and a few triangular scrapers that, like Fig. 95 of Pl. XII., had probably not been utilised as such. They had been deposited on the granite formation, and I traced these layers on the other side of the railway cutting, also resting on the mass of granite which terminates abruptly on the bank of the Eerste River. I traced them also on the other side of the cart-road, flush with the floor of an excavation 30 feet deep, and corresponding, with only a slight incline, with the granite surface on which the deposit rested. The great accumulation of this brick-clay is in itself a proof of great antiquity. But in addition to this Bosman's Crossing deposit I have since proved that palæoliths are found in the whole of the Stellenbosch (Eerste River)

valley high above the river or nearly on a level with it, and seldom accompanied there by chips which are not more in the shape of spalls than of flake-knives. The same conditions obtain in the other river-valleys of South Africa.

In most deposits the partially pared palæoliths are more numerous than the better shaped tongue-implements, but this, I venture to say, is ascribable less to the degree of the maker's skill than to the greater resistance offered to the continuous action of rain-wash which, gradually, brings the artificially worked stones from the original position in which they were left or manufactured to a lower level. The heavy, round, butt-end of a partly pared palæolith offers much more resistance to the denuding agent than the flattened, almost navicular, tongue-shaped implement which rests on a very much reduced surface (see profile of Figs. 1, 2, and 3).

There is, therefore, no reason militating against the acceptance for our South African palæoliths of as great antiquity as for the deposits of the Pyrénées, of Spain or of India, where, as here, the smaller artefacts in the shape of scraper-knives are equally rare.

BEUKESFONTEIN DEPOSIT.

Very primitive-looking are implements of a large type found in the Ceres District of Cape Colony. They could not have attained a much more water-worn aspect had they been rolled for centuries in the shallow yet impetuous waters of a spruit—a treatment which they evidently never experienced, this water-worn aspect being caused by weathering alone. In this locality * the outcrop of the bluish-grey chert band of the Dwyka forms a little ridge, at the base of which is a gentle slope of soft shales. This slope, for a distance of fully 200 yards from the outcrop of the chert band, is strewn with blocks of chert and *worked fragments* of the same. There is very little soil, as the shales crumble away into small fragments. It is therefore impossible to determine what length of time the implements have lain there. No small scraper-knives or flakes were found.

But from the outcrop of the Dwyka chert band Mr. A. R. Walker, one of the Museum Assistants, has brought back from Matjesfontein (Cape Colony) a few implements, among which is a boucher of moderate dimension, whose original facets have disappeared, and which is as equally smoothed and pitted as any one example from Beukesfontein. For an implement to be so closely pitted one must assume a very long period of exposure to the elements. This

* Described in Ann. Rep. of Geol. Com. for 1903, p. 25.

boucher, a digging tool of no considerable technique, is slightly curved in the line of the long axis, but it is as well, or very nearly as well, smoothed and pitted on one face as on the other.

It is doubtful if rain-wash alone caused it to roll regularly in such a way and for such a period that each face was alternately and equally subjected to disintegrating influences, but a stream, now no longer traceable, could have done it; and it must also be stated that there is a dry river not far from the spot to which leads the slope where it was found. According to Mr. Walker, from its position on the lower slope of the hill below the chert band, it might have been carried there from a higher level.

At some distance from that boucher, but above it, Mr. Walker collected one of the usual Karroo type, a moderately small, lanceolate, triangular scraper, patinated also, but not as deeply as the boucher itself.

The patina was distinctly deeper on the obverse than on the reverse side with its usual conchoidal trace of fracture, showing that it had lain undisturbed. At a higher altitude than either the boucher or the scraper were found bluish-grey nuclei with sharp edges, the faceted contour of which corresponds to the shape of the removed flake of the usual sub-lanceolate form, and also a large trimming flake, the jagged edges of which testify to its use, and plainly detached from either a very large pebble or rounded boucher. Its curvature is even greater than that of Fig. 98 in Pl. XII., which in itself is not more incurved than some of the "éclats" we possess from "Le Moustier" Station of France.

The importance attaching to the find of this boucher is that the apical part of one face has been used again slantingly as a muller, or rubbing implement. The abraded surface shows the original bluish-grey texture of the chert pebble—a colouring similar to that of the non-patinated tools found at a higher elevation.

From this it would appear as if the makers of the surviving, somewhat degraded type, such as the usual scraper, either no longer knew the manufacture of, or had never been acquainted with, the primitive use of the boucher. Prompted either by curiosity or a sense of adaptation, they put this tool to a purpose not originally intended for it.

THE CRADOCK DEPOSITS (CAPE COLONY).

I have received from Mr. W. H. Cottell, formerly on the staff of the Cape Colony Public Works Department at Cradock, a represen-

tative collection of stone implements discovered by him in the neighbourhood of that town. I give here his answers to some questions I put him—questions which are well indicated by his answers. I must, however, preface his response by explaining that the “large tools” are palæoliths varying from 6 in. to 8 in. in length, made of a hard shale indurated by the intrusion of dolerite. Some pieces are tongue-shaped, sharply pointed at apex, while others are more irregular; the flaking is very crude in most examples, and the cleavers plainly of a coarse style of manufacture. Although chipping has been carried round the butt in some examples,



FIG. 2.—View looking towards Fish River and first Kranz, 3 miles north of Cradock.

in a few others the contour of the original pebble is retained, much as in the Stellenbosch type; but as a rule these bouchers are less bulging at the centre.*

They have a greyish patina that contrasts greatly with the black colour of the shale, but they have not been smoothed artificially either by water action or by very long exposure. A few pieces are not patinated at all.

The “Bushman tools” are somewhat of the Aurignacian-Solutrian-type scrapers, bevelled at one end by secondary chipping, as figured

* It seems, however, that I have not seen the “best finished implements,” only photographs of some of them, but the latter are quite instructive enough.

in Pl. XVI., Figs. 123 and 128; also nuclei, irregular flakes, scraper-knives, &c., in great quantity, but most of them also of a very crude type.

Mr. Cottell's answers are as follows:—

“Before replying to your questions as to sites, hill, or other formations, in which the palæoliths and the seemingly recent implements are found, I was anxious to visit a few places to make sure of the relation of the ‘palæolithic’ type to the ‘Bushman.’ I found a deposit of a considerable extent of the large tools some 5 miles south of Cradock, and about a mile and a half east of the river. The deposit is on the slope of a flat-topped hill, the west side of which terminates in a *kranz* facing the river (text-fig. 2). The whole of the



FIG. 3.

slope is covered with chipped boulders of a hard, black shale. The same material caps the top of the hill. These tools are very crudely chipped and badly modelled. Some are of gigantic dimensions. The majority appear very modern, almost as if quite recently made. There were a few *old ones* of much better design and finish. I am sending a few of each.

“There were no ‘Bushman’ tools with these large ones, nor remains of game or shells.

“On the *kranz* side of the hill, however, there were ‘Bushman’ flakes, mostly of the knife-scraper lanceolate form, and shells (? *Unio* sp.).

“I revisited the ‘Baths.’ The large types there are on the fringe

of the 'Bushman' deposit, and although there are scrapers near, none are mixed with the large tools.

"These large implements are not deeply buried in the alluvium; the majority are on the surface, and when buried are only covered by a few inches of sand, with the exception, of course, of those washed into 'spruits.'

"The 'Bushman' deposit is almost wholly confined to the river-banks. Scattered over the veldt, however, are occasionally flakes, lance-like in form, usually broken, and without secondary chipping.



FIG. 4.—View showing top part of alluvium and implements left behind after soil has been washed away. Three miles north of Cradock.

With the deposit are quantities of shells, pieces of pottery, and remains of game. Here and there are little piles of broken flags of sandstone, with their faces ground smooth from wear, and water-worn pebbles with one or more ground facets, evidently obtained by being used as mullers or grinders.

"One cannot estimate the age of the tools from the weathering; some found at the surface have the exposed side bleached and the unexposed side almost, if not quite, fresh; * those near the thermal

* This statement is not entirely borne out by some of the examples received; in several both faces have a greyish patina, but a patina shared also by many of the smaller "Bushman" implements.

springs seem to have weathered much more rapidly than elsewhere."

It is difficult to speak with any degree of authority of a deposit which one has not personally inspected, but from the tenor of the letter here given, which is in answer to direct questions sent by me, as well as from the examination of the implements, I am led to conclude, until further investigations disprove my conclusions, that the Cradock deposits imply a contemporaneity between the large bouchers and the small or only comparatively large scraper-knives quite equal to that of the Nooitgedacht deposit. In one case there were no "bushman" implements found together with these palæoliths; while in another the latter were found on the fringe of the "bushman" deposit, which is almost wholly confined to the river-bank.

We have thus probably a repetition of an instance of denudation by rain-wash, the same as in the Stellenbosch, Simondium, and other sites, only that at Cradock the smaller implements have not been carried away, or only partly so, into the streams or rivers.

THE "NOOITGEDACHT" AND BARKLY WEST DEPOSITS.

At a place called "Nooitgedacht," close to the Vaal River, in what is called here the "dry diggings" for diamonds, there have been found scraper-knives, and small and large bouchers made mostly of diabasic rocks, all mixed together.

This find is of very great interest, as showing more conclusively, perhaps, than even the Tyumi River deposit, that knives and scrapers of the Mousterian type were made or used by the same people who manufactured the large bouchers of the chellean-mousterian form.

Miss Wilman* who sent me some of these implements, so abraded that identification was difficult, and whom I had asked to ascertain if there were old or recent river-terraces near the deposit, wrote as follows:—

"The Nooitgedacht implements, big and small, all occur together in a bed of gravel that is being worked on the water's edge of the river (Vaal). In fact, the diggers have been flooded out at times.

"The diggers have removed the overlying sand at *A* and are clearing out the gravel at *B* for sifting and sorting. All the implements sent come from *B*. This, then, is the lowest terrace, and

* A former assistant of this Museum, and now in charge of the McGregor's Memorial Museum at Kimberley.

it rises to a couple of hundred feet and has quite large trees growing upon it. In the sand are no implements, but lying all over the surface are some of the same type, exactly as those found in *B*. Large implements are *not* common on the surface, and some are

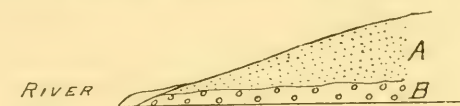


FIG. 5.—*A*—Fine sand. *B*—Gravel, diamond bearing, consisting almost entirely of rolled agates, &c., wherein are the large and small implements.

quite unlike the water-worn rocks that they accompany, and I am convinced that while some are undoubted implements, others were implements in the making.”

The pieces received from Miss Wilman are almost smooth, with the angles and facets quite obliterated. Many are tongue-shaped, and others more or less regularly almond-shaped. The examples represented in Pl. IX., Figs. 57 to 60, which were found at Barkly West, not far from Nooitgedacht, give a good idea of their appearance, though some are even more amorphous.

In common with many collectors who *pick* specimens to oblige friends, Mr. A. du Toit, of the Cape Geological Survey, who presented these last-mentioned examples, left many the conditions of which through abrasion made him doubtful as to their being artefacts.

On the whole, these bouchers show traces of superior workmanship, most of them having been “knapped” on either side. Some are of the unusually large “shard” form trimmed only on one face, and it is to these that Miss Wilman alluded as being in the making.* Several of the smaller, about 100 mm. in length, are well finished, others not; one still retains its wedge shape. The cleavers are easily recognisable, and round the butt of one there is a very irregular depression that, if not accidental, might make hafting by ligatures possible. The cleavers of Pl. VIII., Figs. 52 to 56, met not far from Nooitgedacht, are of the same type.

As for the scraper-knives, their resemblance to similar tools found so commonly all over South Africa is indeed extreme. I have selected a few types for illustration (Pl. XIII., Fig. 105).

I am, unfortunately, debarred from giving in this modest paper illustrations of tools of the same technique found in mid-Europe or England, but I should like to call the attention of antiquarians to the extreme likeness of No. 7 of Fig. 105, to one of the famous

* One sent me is 260 mm. long, and weighs 4 lbs. 4 oz.

“ Micoque ” lanciform knife-scrapers, attributed to the Chellean-Acheulean ; of that of No. 4 of the same Fig. to the “ Chatelperron ” scraper-knives, &c.

The importance of the Nooitgedacht deposit is that the scraper-knives and bouchers are found together, all bearing clear proofs that they have been subjected at one time to the same process of abrasion, and we are therefore justified in arriving at the conclusion that the two types of implements, the boucher and scraper, were artefacts of the same makers.

But when we try to assign a geological date not only to these relics, but also to similar ones from the deposits of the Vaal River, we are confronted with the same difficulties as in the case of the other South African deposits.

In this Nooitgedacht gravel-bed numerous potsherds were found associated with the implements. One piece, now in the Collection, is of moderately close texture ; the greatest thickness is 8 mm. ; the edges of the fracture are not abraded in the least, and the outside glaze is wonderfully well preserved. There is nothing to differentiate it from the pottery made by “ Topnaar ” Hottentots (*vulgo* “ Strand Loopers ”).

This pottery must have been deposited accidentally in the gravel-bed before the latter was covered by the layer of sand, but it points also to the implements having been deposited there in their already abraded condition, because the evidence of the unabraded potsherds preclude the possibility of the implements having been water-worn in their distinctive manner in that particular cul-de-sac, or “ pot-hole.”

They must, therefore, have been brought down with alluvium, from higher levels, from river-terraces. We shall see what evidence is obtainable on that point ; but one must not forget that specimens found in the gravels of the Vaal River must have been left there in the same worn condition as when deposited ; that is to say, worn by gravels in the process of formation.

A close examination of some of the Nooitgedacht pieces reveals traces still fairly visible of the pitting that long-prolonged eolian agencies impart to diabasic implements. This is very important. It implies that the palæoliths were already of great antiquity before being subjected to the fluvatile attrition.

Messrs. J. P. Johnson and R. B. Young, in a paper read before the Geological Society of South Africa,* state that “ all along the

* “ The Relation of the Ancient Deposits of the Vaal River to the Palæolithic Period of South Africa ” (IX., 1906), p. 53.

Vaal River are two well-defined terraces of gravel, the longer one usually being covered with a considerable thickness of loam."

Mr. J. P. Johnson in a subsequent publication * qualifies this statement.

"All along the Vaal River there are well-defined terraces. There are usually two: the upper and older one consisting of a thick bed of gravel; the lower and newer one being, as a rule, a stratum of gravelly detritus lying at the base of a varying thickness of alluvial loam."

The two writers above quoted, when speaking of the Barkly deposit and mentioning the extraordinary abundance in it of the typical palæolithic implements, "all but a very few equally rolled being practically reduced to pebbles," state, *inter alia*: "At Barkly, between the bridge and the village, the upper terrace is well exposed in the old diggings. It lies at the foot of a ridge of hills, hence the talus element is predominant, though the river gravel is in evidence throughout."

They found, together with the rolled bouchers, "a few sharp implements which led them to conclude that that deposit consists of two distinct series, the one probably older, the other perhaps contemporaneous with, perhaps newer than the deposits." Unfortunately, these "sharp" implements are not figured, and it is thus impossible to traverse this conclusion, but we possess a good many pieces from Barkly and its near neighbourhood. I have also seen a good many besides those we own,† and I would certainly not differentiate respecting the contemporaneity of a "sharp" implement, like Fig. 53, of Pl. VIII., a sharply wedged tool, Fig. 56, or an obtuse boucher like Figs. 57 or 58 of Pl. IX.

Mr. A. L. du Toit, of the Cape Colony Geological Survey, who has surveyed this very district, was kind enough, at my request, to investigate this deposit, and this is what he wrote to me, accompanying his remarks with the following diagram given on next page.

"There are several old river-terraces in the neighbourhood of Barkly, one immediately above the present river-bed, and a second from 30 to 40 feet above it as recorded by Messrs. Johnson and Young; this higher terrace is indicated at *A* on the accompanying Fig. At *B* there is a gap in the hills through which a loop of

* The Stone Implements of South Africa, 1908.

† In the Bloemfontein Museum are three specimens found 40 feet deep in the old course of the Vaal River. Two are of the usual worn boucher-type, 100–115 mm. in length; the third is a small circular chip 22 mm. at its greatest length.

the Vaal River very probably flowed in former times, *C* then being an island.

“Traces of still older gravels are found on the tops of the ridges *C* and *D* about 100 feet higher up; but to the north this upper terrace is continuous and well developed, but does not appear to carry any large implements. The gravels at Riverton (west bank) and Warrenton seem similarly to be without implements.

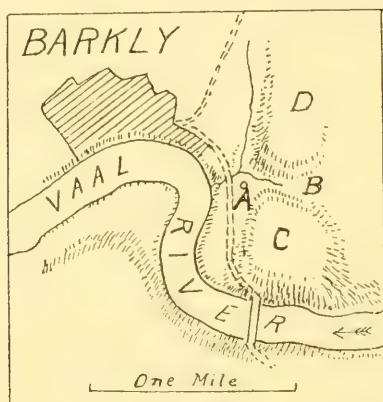


FIG. 6.

“This middle terrace at Barkly, which therefore corresponds to the ‘upper’ of the two authors quoted, carries many rolled implements, and at the point marked *A* they have been brought up in thousands in the course of sinking shafts to reach the diamond-bearing gravel. Among the inclusions of diabase, some only slightly rolled others very well rounded, are numerous large, well-shaped implements considerably water-worn, their abundance at this one spot being most remarkable.

“It seems most likely that the implements were manufactured on the slopes of the little hill *C*, and that they gravitated down into the river at *A*. At the time when this terrace was being formed there would probably be an eddy at *A* where the two branches of the river reunited, and this might account for their extremely rolled condition and possibly for their concentration at this point.”

THE GRIQUALAND WEST JASPER IMPLEMENTS, AND THE TYUMI RIVER DEPOSIT.

The Griqualand brown, yellow, or whitish jasper implements have a certain aspect of their own, perhaps due to the material

of which they are made; but many bouchers are exquisitely finished.

The diggers, or cleavers, are most effective implements, *cf.* Pl. V., and Figs. 48 and 49 of Pl. VII., but they are very seldom found on the surface, and are met together with by-products, chips, and flakes, when opening or cleaning wells or springs that have become obstructed, or have disappeared altogether owing to the deposition of carbonate of lime.

Some of the implements in the Collection have been encountered at a depth varying from 18 to 20 feet. At the springs that supply Griqua Town with water these banded jasper implements were found in great quantity. These finds, made while cleaning water-holes, are extremely common, and have given rise to the belief there that whenever Bushmen had, for fear of attack or for other motives, to abandon the springs round which they lived, they would throw all their domestic appliances into the water-holes and obliterate the latter.

It was at one time thought that the jasper implements were restricted to Griqualand West and the Prieska Districts of the Cape Colony, until a very interesting discovery was made in the banks and on a drift of the Tyumi River, near Lovedale, in the Alice District of Cape Colony. I have seen twenty-eight pieces discovered by Mr. A. Johns, some of which he has presented to us. Among them are many beautifully worked Acheulean-type bouchers, some of which are reproduced on Pl. IX., Figs. 77, 78, and 86, and lanceolate flakes pared on one side only. There are also a few flaking hammers (Fig. 88, Pl. XI.). These implements are made of brown and yellow jasper; parts of the faces that have been exposed exhibit the beautiful glaze peculiar to this sub-type, while others are quite lustreless. With them are three scrapers of black lydianite, and a large and somewhat thin boucher of a rough type that might have served as a broad-edged cleaver. This boucher was made of a local rock.

The finish of the bouchers, and of some of the lanciform knives or scrapers which retain, however, the strong conchoidal bulging of the reverse side, point to a great development in the lithic industry. This find also adds another proof that bouchers and scraper-knives were produced simultaneously and by the same makers.

An interesting point in the Tyumi River discovery is that the jasper rock is not as yet known to occur in this locality. The first suggestion, that the material already manufactured has been transported a distance of 300 miles from Prieska (Cape Colony) by the nomadic makers, had to be abandoned when chips and small fragments were found in some pieces of conglomerate adhering to

the bouchers, showing conclusively that the tools had been made *in situ*.* The origin of the jasper has to be sought, therefore, in the Dwyka conglomerate which crops out about 20 miles south of that spot,† or else the tools were shaped from rough material brought from the northern Karroo.

But the dates of finds, as well as the names of localities, inscribed on the pieces are not always the same, and it would appear that this Tyumi deposit was not restricted to the bank of the river from where most of the examples were obtained by Mr. Johns, or to the river spruit. Unfortunately I could not keep in touch with that gentleman, who discovered the deposit in 1906.

But that the makers carried with them their implements during their migrations or wanderings is borne out by the find in an East London shell-mound of a scraper-knife made of yellow jasper.

THE VEREENIGING DEPOSIT.

Mr. J. P. Johnson has given an account of this deposit in the *Trans. S. Afric. Phil. Soc.*, xvi., 1905, p. 107, which he describes thus:—

“The Vaal in that part has cut a channel deep into the solid rock, and on top of the cliff thus formed, and extending, to my knowledge, some distance east and west of the town, is an old river-terrace consisting of gravel and small boulders embedded in and overlaid by loam. There is a small pit in it, east of the town, where flakes occur in great profusion, and nearly every pebble (which are all of quartzite)‡ has been chipped. They appear to be largely the result of unsuccessful attempts at manufacturing implements. No finished one has been found in this spot. . . . Mr. Leslie’s find is some distance west of the town, where long stretches of the terrace have been furrowed and spread out by the rain. There, for many hundreds of feet, unfinished implements occur in the greatest abundance, the flakes produced in their manufacture by the thousand, while here and there complete specimens are met with. The quartzite seems to have been of too coarse a grain, as a rule, for suitable working, as nearly all the failures and very few finished implements are in this material, the majority of the good specimens being of greenstone (diabase). One or two unfinished examples of chert were found.

* Bouchers of the same jasper rock have lately been found in the Bedford District not very far from the Tyumi River deposit.

† A. L. du Toit.

‡ Compare this with the Nooitgedacht find.

“It is quite clear that these implements must have been made very close to where they are now found. Very probably the gravel is the sweepings of an adjacent land-surface where the implements were manufactured on a large scale. Many of them are as sharp and fresh as on the days they were made, while obliteration of the sharpness of the facets in others is more often due to weathering than wear.”

Mr. Leslie had sent me these implements, I believe, before Mr. Johnson saw them, and I made copious notes of the same, the gist of which is: (1) That diabasic tools are as much worn and smoothed by water agency as those figured on Pl. IX. and of those mentioned in the Barkly West deposit; (2) that the quartzite implements are of a different style of manufacture. They cannot compare in workmanship with the Stellenbosch implements; they are more of the cutting axe (Mousterian) type, one of the faces having been cleaved at one blow, while the other has often only three broad facets and a few (?) secondary chippings along the edge. Fig. 57 of Pl. VIII. is peculiarly instructive; its shape has been obtained by very few blows, yet it is an effective cleaving tool. (3) These quartzite tools show also signs of wear, but nothing like the diabasic ones.

The scraper-knives of diabase have the edges much rounded and abraded, and several of them are almost polished, as if by water; but not so the quartzite implements. Although it must not be forgotten that if the matrix, such as quartzite, is more difficult to work than flint or chert, the difficulty the manufacturer of the boucher encountered in working diabasic rock was probably greater.

We must therefore attach no importance to the assumption that because these two forms are found together they are not only contemporaneous, but produced by the same maker. In fact, I believe the contrary was the case. Mr. Johnson, as here quoted, mentions a small pit (in an old river-terrace) where flakes occur in great profusion, and nearly every pebble (which are *all of quartzite*) has been chipped.

These diabase, or quartzite, relics were not found alone, however. With them I received from Mr. Leslie the agate, quartz, jasper, cherty, small, somewhat amorphous chips, together with small scrapers of the usual modern type.

Mr. Leslie's letter in answer to my questions is very clear on the point:—

“Now to your questions. (1) Have you found on the banks of the river the agate or chert-like small implements mixed with the large ones?—Yes, but more often the large ones are mixed with the

small ones in the sense that when a patch of small implements is found, large flakes or coarse chippings are found in smaller numbers comparatively. (2) Do the diabase implements occur in conjunction with the quartzitic?—Yes; I can find no dividing line between any. When I say that really all the large implements sent you, with a great many more, were found on the river-banks within a distance of 200 yards along the river, and about 50 yards from it, it will be seen how very difficult it was to distinguish between their relative positions; but with regard to the small agate ones, they, or the greater number of them, were found about a mile away associated with large flakes. . . .

“On the receipt of your letter I went to a spot about 500 yards from where the implements were found. On a space of 10 feet square I saw flakes, chips, &c., which I am sending you; they show the variety well. I am of opinion that the sign of great age of many of the large implements or flakes is due to weathering.”*

The Vereeniging find was made in 1905. Mr. Ivor Guest kindly sent me a sketch-map of the locality. When he visited Bosman's Crossing at Stellenbosch he found that the talus conditions were the same in both places. I pointed out the Bosman's site and all its features to Mr. Leslie in 1908, and he informed me that the situation was identical with that of Vereeniging, which he described as “a talus of 4 or 5 feet in depth and extending some miles along the banks of the Vaal River and about a mile wide; implements both large and small may be found in any part of it.”

With the evidence before us it is safe to conclude that the Vereeniging deposit is another instance of accumulation in talus, and this by degrees.

Whether the first makers used quartzite, and those that followed diabase for their manufacture is not likely to be conclusively proved; † I believe that they were not the same race, or had not the same lithic culture or skill. As to the makers of the small, uncouth agate or chert implements, we can, I think, consider them to have been people, if not of another race, at least of one that had lost this state of culture, and this possibly, if not probably, because the invention of another and more effective weapon, or the acquired knowledge of iron, caused them either to discard the ancient types or to restrict themselves to one particular line. These agate, &c., implements are similar to those dealt with further on in the

* In the face of the Nootgedacht and Barkly West finds, this conclusion is erroneous.

† The dolerite implements are of a far more advanced type than the quartzite.

account of the domestic implements of the up-country caves or rock-shelters.

THE FISHHOOK DEPOSIT.

Fishhook, or "Vishoek," is a crescent-shaped sandy beach, through which meanders and usually loses itself in the sands a rivulet, or rather small stream. It is situated between Kalk Bay, a well-known seaside resort, and Simon's Town, the seat of the Admiralty, and some 16 miles distant from Cape Town. On one side runs the road to the Kommetje, on the other that of Nordhoek, and the valley runs from False Bay on one side of the Cape Peninsula to Chapman's Bay on the other.

On one side of the valley is a high hill of Table Mountain sandstone, forming a very long spur, but this hill, like others in the neighbourhood, is covered by unceasingly advancing and retreating dunes of white sand, in places several hundred feet high, rolling imperceptibly upwards over the rugged sides of the mountain crags under the propulsion of south-east winds of great violence, even capping the crest of the hills in the manner shown in text-figure 7. If the wind veers to the east, or more especially to the north-west, this covering is blown as huge walls of sand in an opposite direction, thus uncovering part or the whole of the original surface, but only for a short period, especially where the distance from either sea increases.

It was on such an occasion that there were discovered at the foot of a sand-dune, advancing perceptibly to cover again the exposed rocks, bouchers of unmistakably Chellean, Acheulean, and Mousterian types, together with broad flakes of palæolithic form, detaching hammers (Fig. 75), &c.

Intermingled with these were also flakes and scrapers in the style and of the material occurring so numerously on the Cape Flats (Pl. XV., Figs. 118, 120), flakers of the same quartzite (Pl. XI., Figs. 86, 90), and, lastly, sherds of Strand-Looper pottery.

All this "outillage" was resting on a sloping layer of ironstone gravel, in the process perhaps of formation, and producing in places quite a smooth floor, sufficient, however, to stop effectually its gravitation to a greater depth. Many of the implements were wedged in anfractuosities of the uncovered rocks (*A* in text-figure 7). The layer of ironstone was plainly continued under the readvancing sand-hill, at the very foot of which we found one of the most sharply ending bouchers I have as yet seen, and partially coated with ironstone.

On ascending the hill we kept finding palæoliths, made mostly of a more quartzitic sandstone than the usual Stellenbosch type—a sandstone that, we found later, occurs only some 4 or 5 miles from the spot.

Well-nigh at the top (*B* in text-figure) were palæoliths, some jammed into the interstices of the rocks, which are perforated and vermiculated by sand action in a very singular manner. Here and



FIG. 7.

there also we found the small Cape Flat type of flakes and potsherds.

More numerous than the large implements, there occurred at that altitude, some 400 feet from the first find, large detaching hammers of the type of Fig. 75. Their weight had offered probably more resistance to their removal to a lower level.

Proceeding along the line of the hill, we did not find any boucher, but at a lower level we met instead with many large hammers or nuclei similar to those found at the higher level. Fig. 75 of Pl. XI., picked up there, represents a moderately-sized one.

Arrested no longer by the layer of ironstone, which is not to be found there, they have by the pulsating effect of the removal of the sand reached the floor of the dune, and have in several instances

been deposited so as to form an irregular circle. Fig. 86, Pl. XI., was found on the slope of that floor. Fairly numerous, too, were the small Cape Flats flakes, and we picked up several mullers of small dimensions with the usual ground end of the type of Fig. 168 in Pl. XXIII.

Some 2 miles off, and near a lagoon, but in line with this floor, quite a number of mortars, some of large dimensions, have since been discovered close to each other, some being very much sand-worn.

On examination it is found that in a few of the bouchers occurring in that locality the original reverse smooth face (Mousterian type) has been retained; others show usually an attempt at paring, while on each side, and round the butt also, many show signs of having been manufactured from a rounded pebble by retaining a part of the contour. The majority were plainly detached from large nuclei. The cleaving tools were very serviceable, and of the type of Fig. 33, Pl. IV.

In length, the digging tools vary from 26 cm. to 10 cm. I have seen an extremely well-shaped example of the size and shape of Fig. 4, Pl. I. We found a few throwing-stones, and the usual accompanying waste of broad flakes that could be utilised as scrapers. All these implements were very finely pitted by sand action. But, taken together, the bouchers, nuclei, and large flakes are undoubtedly of the Stellenbosch, Chellean-Mousterian type, the only difference being that they are made from a grained, more quartzitic sandstone.

Yet there is no evidence that the narrow lamellate surface-quartzite flakes, the mullers with one rounded face, the mortars with the hollow depression, and the rough potsherds are connected with the Stellenbosch, Chellean-Mousterian type, although some reservation may be made in regard to the scrapers or flakes. How can the finding of types so very different lying together in close juxtaposition be reconciled?

The valley of Fishhook is extremely well suited to the requirements of primitive man, whose main life support was fishing or hunting. An abundance of never-failing water—so attractive an object to man or beast in Africa—an extremely mild climate, “vleis” wherein to fish or obtain wildfowl, a superfluous abundance of sea-shell (*Haliotis*, *Patella*, *Mytilus*) to be found on either side of the isthmus, such were the advantages that primitive man found at Fishhook, and of which, judging from its relics, he made the most of.

But the sand-dunes, under the impulsion of impetuous and seasonably recurring winds, have swayed to and fro for years untold, moving forwards and backwards, thus disintegrating the sandstone of the hills encountered in their onward or retrograde march—a disintegration greatly helped by saline matters. These dunes must have been, and still are, a most powerful erosive factor, as is but too plain when the rocks which they cover are laid bare.

Now, it must be remembered that bouchers and nuclei are found at the top of the partly uncovered slope, some are so wedged in the deeply and broadly pitted sandstone that a hammer had to be used to remove them. As it is impossible that these very heavy implements could have been rolled upwards from a lower level by the sand that forms these billowy dunes, we cannot but conclude that they were deposited in the situation in which we found them from a once more elevated level, a higher level eroded by the action of the shifting sands, and an erosion doubtless of great antiquity.*

But the recent quartzite scrapers are found in the same situation; and why should they not have come also from the eroded higher level?

In dealing with the Tsumi River deposit, I have pointed out that scrapers of exactly the same type as those occurring on the Cape Flats, and associated there with beautiful Solutrian laurel-leaf-like implements worked on both sides, were found in such juxtaposition with most finished bouchers of an Acheulean type that it is impossible to doubt the contemporaneity of the two. The same thing occurs also on the Cape Flats. Small bouchers of Acheulean type, made of the same recent quartzite as the Solutrian implements, are occasionally met with, but, I must add, lying by themselves. Fig. 18, Pl. 93, represents one of these bouchers.

It would not, therefore, be safe to deny the possibility of these surface quartzite flakes having been coexistent with the Chellean-Mousterian type found at Fishhook, except for the following reason:—

Further investigation has revealed, close by, a midden containing the usual domestic appliances of flakes and chips, querns and potsherds, and among them a javelin-head of the advanced type, but

* Since this account was written bouchers of the same palæolithic type as those found at Fishhook have been discovered at the very top of the mountains flanking the valley. At Glencairn they show the same effect of sand-blast, and were discovered along the only possible opening that could lead to the "Kommetjee," on the other side of that part of the peninsula.

We have thus a repetition of the occupation of heights by the early, or primitive makers, comparable to the Paarl, Simondium, and other sites.

somewhat roughly worked on both sides. This midden is of the Strand-Looper type, and no Chellean-Mousterian boucher has as yet been found the connection of which with the midden is indubitable.

The evidence afforded by the presence of this midden may and probably does account for the presence of these high-type flakes, as well as for that of the mortars and pounders, such middens never being without an abundance of them and some containing objects quite modern.

The flakes were probably made and the debris of the industry deposited at the time when the hill, which commands even now a good view of the whole valley, was partially uncovered, after a long period of erosion. Being much lighter, and some even of inconsiderable weight, they, as well as the potsherds, found their way with a rapidity appropriate to their size and weight to the level which the Chellean-Mousterian bouchers had reached before them. It must be remembered that no boucher was found on the furthest point of the uncovered floor of the dune, and also that about one mile further, and close to an existent lagoon, quite a number of mortars but no bouchers were found. This seems to point to the fact that the people that made the mortars and the pottery were not necessarily the manufacturers of the Chellean-Mousterian palæoliths.

THE "EAST LONDON" DEPOSIT.

The late Mr. George McKay, of East London, has left some very interesting notes on the occurrence of stone implements at or near the mouth of the Buffalo River at East London, Cape Colony, and, were his premises correct, we could conclude that the relics found there must represent an enormous lapse of time.

We are greatly indebted to Mr. John Wood, of East London, for a very representative collection of these local implements.

The finds consist of scraper-knives, mullers, perforated stones, and potsherds, *i.e.*, in many instances the usual domestic appliances of shell-mounds along our coasts.

I may state, however, that the scraper-knife flakes, long or of moderate size, found there, are, with very few exceptions, the most worn of the South African implements of that kind that I have seen. Fig. 102 of Pl. XII. is a case in point, and although the finds sent do not include bouchers these scraper-knives or flakers belong certainly to the South African palæolithic, but Mr. Wood adds:—

“The biggest implement I found here was a wedge-shaped one,

9 or 10 inches long, and perhaps $1\frac{1}{2}$ or 2 inches at the broadest. It is in the King Williamstown Museum.* Of course you understand that, so far as finding on the surface goes, the implements are most abundant away from the shell mounds: they are in plenty on the broken ridges just a little back from the beach."

Among the reasons given by Mr. McKay for attributing a great antiquity to these finds are the following:—

"Some years ago in opening a quarry a very large mound of shells was discovered on the left bank of the Quigney River at its junction with the Buffalo. It was covered with vegetable soil, with trees growing on it, just like the section remaining to-day. The Harbour Works engineers have removed upwards of 375,000 cubic feet of these shells to fill up the lagoon. Any one examining what remains of this mound will find it composed principally of limpet, mussel, oyster, haliotis, and other shells of edible species, with bones of fish and birds as well as of antelopes, hippopotamus, and other mammalia, layers of ashes, fragments of charcoal, and pieces of coarse pottery. No stone implement has been found, but stones showing the action of fire are common."

". . . to afford material for forming the railway embankment. The ground (covered by a dense bush) consisted of from 4 to 5 feet of stiff clay soil followed by about a foot of travelled gravel, that is rolled gravel having a close resemblance to shot of different sizes. A little above the gravel line a large number of stone implements were found, chiefly rubbers; a few spear-heads (lanceolate knife-scrapers)† were found with stone fragments of coarse pottery, &c. Mr. Gately's residence stands on the rounded top of an isolated knoll or small hill which is connected with the site of East London by a narrow neck. This neck is the dividing ridge of two water-courses that nearly surround the hill before they unite and find their way to the first creek. These two water-courses have been the cause of the isolation of the hill. On its top there is a layer of black mud from 2 to 3 feet thick, below that there is from 1 to 2 feet of decomposed rock before solid rock is reached. Out of this black mud Mr. Gately has dug many implements and bones; among them stone-flakes, spear-heads (knife-scrapers),† coarse pottery, teeth and bones of hippopotamus . . . There was a time when Mr. Gately's house was not a hill, and the implements found there are as old as that time. . . . Fringing in detached patches the whole South-Eastern coast of Africa there exists a peculiar wind-stratified

* I have seen the example. It is a strongly incurved flake or flaker and of undoubted palæolithic type.

† The words in brackets are mine.

calcareous sandstone. At Cove Rock and Bat's Cave it abounds with fossils, especially at the latter place. The peculiarities of the stratification leave no doubt whatever that this is an eolian formation. Out of it I have taken three well-formed stone spear-heads (knife-scrapers) at the level of low water, in a position where they must at one time have been covered by 180 feet of this rock-drifted sand which has become consolidated into hard rock, &c."

Mr. McKay's contentions as to the extremely old origin of these knife-scrapers, mullers, potsherds, &c., might at first sight appear warranted were it not that the whole "outillage," or domestic appliances pertain to the midden or shell-mound type, and as I have endeavoured to show in another chapter, it is not in a midden, always void of the Chellean or Acheulean as well as Moustertian bouchers, that we can expect to find a possible clue to the antiquity of primitive man.

But Mr. John Wood, of East London, has been kind enough to send the following notes regarding the estuary of the Buffalo River:—

" . . . ; this would have been a revelation to the late Mr. McKay, who thought that the stone implements found upon the banks of the river among the fragments of sub-aerially decomposed rock (which he seems to have regarded as river gravel) had been dropped by the water margin and lain there—under a subsequent covering of soil—throughout the period taken by the river to wear its way down to its present level 80 to 100 feet below. He did not know the old channel was still another 120 feet deeper down.* My notion is that implements dropped as they were being made on the ground, and have gradually worked their way, assisted by well-known agencies—through the 2 or 3 feet or so of soil there is, as a rule here, covering the bedrock of the country. I have turned up with the spade in my garden, which is close to the river, a number of flaked stones, and once a nice 'rubbing stone.'

" Another mistake I fancy Mr. McKay made was when commenting upon the occurrence of stone implements along the beach near Bat's Cove. His idea was that they had been dropped among the pebbles at tidal mark and then overwhelmed in a mass of sand—probably a dune of over 100 feet high judging from surroundings—which was converted into eolian sandstone. But as the spot where those implements and pebbles are found is a very circumscribed one, I should say the explanation is that we are upon the site of an *old cave* there, led up to by a gully or cove into which the waves heaped

* A fact which came to light when the engineers bored for foundations for the bridge placed across the Buffalo after MacKay's day.

a collection of pebbles, and that the roofs afterwards collapsed. At present there is a detached block of eolian sandstone lying upon 3 feet or so of rolled pebbles—also bound fast by the lime—and it is amongst these the implements and bone fragments are found.

“The coarsely cemented sand shell masses along our beach here are hardly entitled to be called rocks; they are the cores of old sand-dunes quickly formed and quickly disintegrated; and there are other similar spots near at hand where the occurrence I have been surmising is likely to be re-enacted at no distant date.

“I think, too, his deductions from the ‘finds’ in Gately’s garden are unwarranted. A shell-midden exists there lying upon the shale, the latter comes to about a foot from the surface. Anything imperishable left lying about would surely soon sink through that shallow soil. It would be good camping ground for the Strand Loopers because of its outlook, and there was a vlei near at hand upon the site of which, by the way, our Town Hall now stands.”

Negative again in this case is evidence of great antiquity, and I would not have mentioned the East London deposit were it not that the late G. McKay’s account of it is on record, and may prove misleading.

I have before me a large photograph of sixty-three implements collected by him. Some are large flakes that may be palæolithic, but the presence of numerous “!Kwès”^{*} whole or broken, perforated entirely or partly, large, and very small, with an accompaniment of mullers of different sizes, and also of “pygmy” flakes, denote but too well the domestic appliances of the shell-mound dwellers. This photograph was evidently intended to be an illustration, as representative as possible, of these stone implements, the deposition of which showing proofs of untold ages in the antiquity of man was such a cherished idea of the investigator, who, like Stow and others, unfortunately did not know how to discriminate between palæolithic and neolithic types.

In this photograph there is not one figure approximating a boucher. Large flakes are there, but there are no means of ascertaining their size. Some look weathered, others not; but on the whole these flakes are typical of those sent us by Mr. J. Wood.

I have already sounded a note of warning as to attributing a very ancient or comparatively modern age to our South African

* A “!Kwè” is a more or less spherical stone perforated in the centre, the perforation being begun at each end and meeting in the centre (see chapter on !Kwès, &c.).

scraper-knife-flakes, owing to the continuous survival of the type due probably to the facility of shaping or evolving the implement from any loose stone. But some, such as Figs. 102 and 103, have such a worn appearance that even a long continuation of eolian agencies would be required to impart the same, and the absence of bouchers cannot in their case be claimed for their rejuvenation.

That this absence may be accidental is proved by the fact that although no palæolith in the shape of a tongue-shaped or cleaver-like tool can be said to have hitherto been discovered in the East London beach deposit, nor in the "broken ridges just a little back of the beach" where very large worn flakes do, however, occur, yet Mr. J. Wood has quite lately discovered at no great distance from there, near the mouth of the Nahoon River, bouchers, mostly huge (judging from the examples he sent us) * lying together with flakes of the kind which I consider belongs to the South African Palæolithic.

And thus the discrepancy between the styles of the stone tools in McKay's photograph are explained.

The !Kwès, mullers, some of the flakes, and the "pygmies" are recent additions deposited at or near the place where implements of palæolithic type had gravitated, or been manufactured very long before the Strand Looper had left there his own mark of occupation.

* These bouchers are made of volcanic rock or of Karroo sandstone. They are very roughly trimmed, and all those sent us are large. None is tongue- or almond-shaped; some are pointed at both ends; in others, made of sandstone, the butt retains the contour of the rolled pebble. The flakes are of the usual knife-scraper shape, but are plainly worn.

CHAPTER VII.

PALÆONTOLOGICAL AND GEOLOGICAL EVIDENCE.

PALÆONTOLOGICAL.

The Pleistocene or early Quaternary period of the Northern Hemisphere was characterised by the extension of ice, and the deposit of deep alluvium in valleys and plains.

There existed during this period not only in the palæolithic Region or the greater part of it, but also far south of it, a mammalian fauna including, among large forms, several that have survived in Africa and also in India, where "some of the deposits show how long was the period during which the encroachment of some of the great African land animals into Europe and India must have persisted." *

But, as far as South Africa is concerned, no traces of Pleistocene glacial conditions have as yet been observed, although carefully searched for by the two Geological Survey parties who are mapping this part of the African Continent.

The problem is still more complicated because most of our large mammals have outlived the Pleistocene, showing thus a longer survival than in Europe, while others which we know existed there in the early Pleistocene are still with us, and to all intents and purposes unchanged, although their progenitors were contemporaneous with Chelleo-Mousterian man.

HYÆNAS.—*Hyæna brunnea*, our so-called "Strand Wolf," lived together with *Elephas antiquus*, perhaps even with *E. meridionalis*,

* Suess, "The Face of the Earth," Engl. Edit., vol. iv., Oxford, 1909.

Ibid. "If we compare Pilgrim's description of the fauna of the alluvium of the Godavari, and of the caves of Kamul (on the Kistna), where the remains of *Manis* still occur, with Boule's account of the stratified succession in the Grimaldi grottoes (Monaco), we discover that man was a witness of this extension, both in Europe and in India. In Europe it extends into the interglacial phase of the Chellean."

Rhinoceros mercki, *Hippopotamus major*, &c., in the same manner that it does now, or did till a few years ago, with *Elephas africanus* (that survivor of the elephants of the same African type to which *E. meridionalis* and *E. antiquus* belonged), *Rhinoceros sinuatus*, our white Rhinoceros which several Palæontologists consider to be the same as *R. mercki*, *Hippopotamus major*, of which *H. amphibius* is merely a variety, or survivor, &c.

Hyæna crocuta, the spotted hyæna, which we call here "Tiger Wolf," is now generally identified with the "Cave Hyæna" (*Hyæna spelæa*), the remains of which have been found throughout Europe, from Yorkshire in England to Gibraltar, and as far east as the Madras Presidency in India.

While its congener *H. brunnea* was seemingly pertaining more to the warm fauna of the early Pleistocene, *H. crocuta* kept company with the long-haired, woolly Mammoth, and the equally thickly woolled *Rhinoceros tichorhinus*.

Yet those two descendants of a very ancient race are now restricted to a warm climate, where intense cold comparable with that of the second period of the Pleistocene never prevailed.*

With such cases of survival before us, it is plain that when we find in caves an accumulation of bones, some of which bear the distinctive marks imprinted on them by the powerful jaws of Hyæna, more corroborative evidence is required to assign great antiquity to the deposit.†

MASTODON.—Part of the tooth (molar) of a Mastodon has been found in close proximity to, if not actually in, the Barkly West Deposit, of which Mr. A. L. du Toit has given here an account, and is described by E. Fraas.‡

This fragment is the only find of its kind known hitherto, but there is no reason to believe that the find is not genuine, and it will be remembered that the palæoliths, bouchers or flakes, found in this deposit are extremely worn (see Pls. VIII. and IX., and Fig. 105 in Pl. XIII.).§

I wrote to M. Boule, submitting an account of the find of the

* *Hyæna brunnea* seems to be confined now to West Africa; *Hyæna crocuta* roams all over Africa, south of the Sahara to the Cape of Good Hope.

† See account of Hawston Cave, Chapter XVI.

‡ "Pleistocäne fauna aus den Diamantseifen," Zeits. d. Deutsch. Geol. Ges., 1907.

§ In the Bloemfontein Museum are two bouchers of large size bearing the inscription, "Found 40 feet deep in old course of Vaal River, Barkly West." It is probable that these implements were collected by either Stow or C. Sirr Orpen at the very spot mentioned by Mr. du Toit.

tooth and of the palæoliths, and also pointing to the fact that if it were duly proven that the palæoliths were associated with the mastodon molar tooth, a much greater antiquity would have to be claimed for these artefacts.

But the learned Professor of Palæontology of the Paris Museum answered my communication to this effect: "This contention would be true, provided the genus *Mastodon* did not last longer in Africa than it did in Europe, where it does not go beyond the limit of the Pleistocene. It has, perhaps, survived with you during the Quaternary (Pleistocene) period, as it has done in North and South America." *

The finds in the sands of the Fayoum seem to justify this contention. Moreover, the tooth belongs to the Bunolophon group of *Mastodon* in which all the North African species described by Gaudry and Depéret are included.

On the other hand, this molar tooth may have come from a terrace that was once much higher than the deposit on which it was found.

ANTELOPES.—If we turn to the *Antilopinae*, a group of Mammals numbering so many species in Africa, but which, with the exception of the cold-loving *Antilope saiga*, are not represented in the European Quaternary, we find an extinct *Bubalis*, *B. priscus*, Broom.†

BUBALIS, or ALCELAPHUS, as it is sometimes called, is, like several other antelopes, recorded from the Pliocene beds of India (Siwalik).

This find here is represented by one example only, and consists of the post-orbital portion of a skull with the proximal part of the left horn-core. The interest attaching to the example is that it was discovered in the banks of the Modder River, and apparently not far from where Rickard discovered implements of palæolithic type.‡ But the connection of the Palæoliths with the remains of that extinct *Bubalis* is merely conjectural. This fragmentary skull is quite black, in the manner of many of the ancient bones found in Europe in river-drift.

BUFFALO AND HORSE.—For some time now a Buffalo, which judging from the size of the horn-cores must have been gigantic, has been known from South Africa. It was described by Seeley from our example in the Museum—a part of the frontal and the

* L'Anthropologie, xxi., 1910, p. 248.

† Ann. S. Afric. Museum, vii., 1909, p. 279, c. fig.

‡ Cambridg. Com. Antiq. Soc., v., 1880–1881.

complete horn-cores measuring 14 feet in the curve. The locality is probably the banks of the Caledon River, in the Orange Free State. Three more, but quite incomplete, examples have been discovered since, one at Bloembosch, Cape Colony, of which more anon.

Nearly completing the series of finds of Quaternary deposits, is now recorded a large horse—not zebra. Broom has lately described it under the name of *Equus capensis*.^{*} The description is mainly based on the left lower jaw, although some teeth, still larger, were available, but were overlooked.

These remains were discovered in the following manner: The owner of a cattle-ranch, called Bloembosch, some 20 miles from Darling, in the Cape Colony, was much troubled by the advance of sand-dunes which were threatening to cover a perennial spring, and he set about planting a certain kind of grass used to stop their progress. At the foot of that dune, and not far from the spring, he came across a skull and horn-cores of such a size that his attention was attracted, and he brought part of it to his homestead, where it was seen by Mr. H. M. Oakley, who, being acquainted with the first example of *Bubalus bairdi*, recognised at once the relic as belonging to the same animal. He informed me of the find, bringing at the same time a number of bones belonging to the Rhinoceros, Eland, Bubalis, Bubalus, Equus, &c. Both the Geologist and the Palæontologist of the Museum, Mr. du Toit and Dr. Broom, as well as Mr. Bain and myself, visited the place, and we came to the same conclusion, a conclusion arrived at from different considerations, that these bones had not accumulated at that spot by the formation of a deposit, but had been brought piecemeal to or near the water by beast or man. No complete skeleton was found.

The teeth of the horse measure 198 mm., and are thus larger than those of the *Equus sivalensis*. One atlas of Bubalus measures 351 mm. in width and 123 mm. in length.

On the exposed floor of the dune we found the usual accompaniment of a Midden in proximity to the water: mullers and small scrapers, borers or drills and ostrich-egg-shell beads, two brass buttons, &c.; and it is difficult indeed to come to any conclusion other than the occupiers of the midden were responsible for these bones accumulating in that spot. Neither large bouchers nor large scraper-knives were found, and if these large animals were slain by the Strand Looper—and slain by man they undoubtedly were—it must have been done by craft and by means of the tiny, neolithic stone weapons, found *in situ*.

^{*} Ann. S. Afric. Museum, vii., 1909, p. 281.

The horse is manifestly not old geologically, and the same may be said respecting *Bubalus*, but at all events in the case of the latter, whereas no one would be surprised to find its remains in marshy spots or near banks of flowing rivers, one is indeed surprised to find it in places now almost waterless, but probably made so by a gradual rising of the coast belt, during which period the aboriginal was not acquainted with the use of palæoliths.

On the other hand also, this aboriginal would, of necessity, come to water, and the remnants of his domestic industry may have been deposited there long after the animals had been laid low. One of the femora of *Bubalus* had been split open as if to obtain the marrow, but it is very difficult to decide if it be the work of man or hyæna.

And on the whole this restricted palæontological evidence would be of little weight were it not that in Algeria there have been found, at the bottom of a small lake called Lake Karar, palæoliths resembling so much in shape and even material the South African ones as to be almost indistinguishable. With them also were found small pieces of the Cape Town Flats and Karroo type, the better trimmed of which are made of flint; but their contemporaneity, according to M. Boule, who has investigated this deposit, with the quartzite palæoliths is doubtful.* The numerous bones found with the Lake Karar implements are those of Elephant, Horse, Hippopotamus, Rhinoceros, Pig, Gnu, *Bubalus*, and Stag. The Elephant is an extinct kind, but belonging to one more related to the Quaternary, or even the Pliocene Elephants of Europe; others, except the Stag, are still living in the south of the African continent; the Rhinoceros is *R. simus*; the Gnu is probably *Connochates taurinus* or *C. gnu*; the Horse, *Equus burchelli*, &c.; and the Buffalo, *Bubalus antiquus*, does not seem to differ much from *Bubalus baini*, our extinct species.

But with implements of such ancient palæolithic type one would have expected to find remains of the animals that characterise the finds at Chelles, &c. Why are not the Elephants, *E. antiquus* or *E. meridionalis*, *Hyæna spelæa* or *brunnea*, the Stenon horse, *Machaurodes* or *Ursus spelæus*, represented in that deposit if its great antiquity is to be assumed? M. Boule admits that the Quaternary fauna of Algeria and that of Europe do greatly differ. The former consists of species that have migrated in the manner followed by forms now northern, and the remains of which are found in the European Quaternary deposits.

* M. Boule, "Station Paléolithique du lac Karar," *L'Anthropologie*, xi., 1900.

But there are still some elements of doubt as to the relative age of this Lake Karar deposit.

Those who are persuaded that the Chellean-Mousterian boucher is of extreme antiquity may agree that there is nothing to prove that the Palæoliths and the animals were deposited together during the same epoch.

To those who think that too great an antiquity is claimed for the Palæoliths, and that their presence or existence should be reckoned by hundreds instead of thousands of years, the presence in this deposit of large animals, mostly all living at the present time, would seem to militate in favour of their view.*

But, as Boule justly remarks, no implement from among those extracted from the Lake can be included in the Neolithic †; and no remains of the animals now living in the country have been found in the Lake.

In North-Western Rhodesia there has been discovered at a place called "Broken Hill," in caves of very singular formation, an accumulation of bones of different animals, in which the Antelopes predominate, and among them was found a Rhinoceros, said to be an extinct species, on the strength of a femur or tibia.

In the same deposit were also found small stone implements quite similar to these occurring on the surface, in the Kafue River valley, and greatly resembling the examples found in the Matoppo caves (Pl. XVII., Fig. 133).

Mr. Franklin White informs me that he has found in these caves the unmistakable coproliths of the Hyæna, identified, moreover, as such at the British Museum.

But there seems to have been no absolutely reliable systematic investigation of the layers of these caves' deposits; and, although it is claimed that this is the first case when stone implements have been, in South Africa, connected with bones of an extinct animal—which is really not a true assertion—the evidence of an extinct species of an hitherto unknown Rhinoceros, based on a leg-bone, is not to be very seriously considered, and still less accepted, by those zoologists or palæontologists who are aware that even the dentition of these animals is not a sure clue to their specific identity.

On the other hand, Dr. Broom, our Museum Palæontologist, is of opinion that among the remains received by us from this Broken

* H. O. Forbes, "On the Age of the Surface Flint Implements of Egypt and Somaliland," *Bull. Liverp. Museums*, iii., 1901.

† Some have, however, been found on the surface close to the Lake, but they belong so unmistakably to the polished stone period that they cannot in the least be associated with the palæolithic forms.

Hill cave-deposits, there is included part of the skull of a large unknown bird.

GEOLOGICAL EVIDENCE.

So far Geology has not been of much use here in helping to elucidate the problem of the antiquity of our Stone Implements.

But Mr. A. W. Rogers has recorded a find which is of the utmost importance. It is embodied in the Tenth Annual Report of the Geological Commission of the Cape of Good Hope, p. 293.

In 1905 Mr. George Robertson, of "Klein Brak" River, near Mossel Bay, sent to the South African Museum some shells that came from a quarry on his property. Mr. Rogers had occasion to visit the spot and of obtaining a representative collection of the fossils preserved there.

"A low ridge or terrace, rising to a height of about 15 feet above the level of the Klein Brak River vlei, marks the position of the shelly beds, and small quarries have been opened in the ridge for the purpose of getting out limestone for building. The limestone is a loose-textured, rather incoherent rock, but it hardens rapidly on exposure and appears to stand the weather well. It contains a number of shells which can easily be removed from the rock."

The species obtained are enumerated. "All these species, with the exception of the *Cerithium* and *Calliostoma*, are known from the South African seas, though some of them (*Panopea natalensis* and *Triton australis*) do not appear to have been recorded from the coasts of the Cape Colony.

"In the limestone I found a *piece of quartzite which appears to have been shaped by man*. It has a form common to many rude implements of small size found on the surface in various parts of the Colony. Mr. Robertson told me he had found round stones flattened at one end, evidently by use as crushers or pounders, in the limestone. . . . The limestone must have been formed at a time when the land stood at least 15 feet lower than now, and when the shore of Mossel Bay passed some two miles inland of its present position."

The quartzite implement mentioned by Mr. Rogers is in our Collection. It is a fragment of a knife-scraper flake, in shape and composition corresponding with examples found on the surface in the Mossel Bay district, especially at Cape St. Blaize.

That this primitive implement was deposited there in times far remote admits of no doubt whatever. The pity is that it should prove to be an instrument that can give no clue, although from its mere appearance, and without knowing its history, I would have

included it in the South African palæolithic. On Mr. Robertson's evidence, pounders of the type of our dune-middens and caves have also been found in the limestone. These I have not seen, and the presence of a vlei may account for their occurrence there, even at a depth that is, unfortunately, not stated.

But Mr. Rogers' evidence is that of a professional man, and, whether or not the mullers and the flake are contemporaneous, we have at least one example of great antiquity clearly established in the situation in which the said flake was found.

THE NEOLITHIC.

CHAPTER VIII.

AURIGNACIAN, SOLUTRIAN, MAGDALENIAN, &C., TYPES.

POINTS, SCRAPERS OR FLAKE-KNIVES.

Before proceeding to deal with the question, Have there been in South Africa periods or sub-divisions of the post-Mousterian corresponding to, or coinciding with the Aurignacian, Solutrian, Magdalenian, or post-Magdalenian? it is as well that a definition of the Mousterian type be given.

Déchelete's is one of the most concise.*

"The implement is a flake usually triangular, the two lateral sides of which are trimmed again with care upon one of the faces. The part opposite to the sharp end, a part usually called base or butt, is oftener than not without secondary trimming. Noticeable is the place where the blow of the striking tool has fallen, which blow, as a direct result, produces on the reverse the bulb of percussion, a swelling which is *very seldom* subsequently thinned or reduced. The reverse of the Mousterian *point* † is smooth, and it differs on that account from the Chellean implement; it is always lighter, being seldom more than 10 cm. in length, and is longer than broad."

Gradually, however, and sometimes too suddenly, the Mousterian *outillage* disappears in Europe. It is replaced by implements of very superior technique. No longer prevails the spall with bulging bulb of percussion, very little trimmed on one face, and the other left as formed under the detaching blow; even the scrapers themselves show traces of secondary trimming on the sides; pieces

* "Manuel d'Archéol. préhist.," i., 1908.

† But the word "point" must not be taken necessarily to mean a lance-head, arrow-head or other penetrating implement, it corresponds even to the "boucher" of the period.

chipped on both faces are common; arrow- and javelin-heads, thin symmetrically produced into a laurel- or willow-leaf shape appear; some of the points have a truly characteristic tang continued on one side for hafting. Every piece denotes a great advance in the lithic industry. The large palæoliths, whether amygdaloidal or not, bifacial, or simple on one side, are now discarded. Ultimately this Solutrian technique will also be partly abandoned, to be partly replaced by the bone industry which characterises the Magdalenian, the epoch that follows the Solutrian.

This sudden advance from the Mousterian to the Solutrian is not easily explained, but in order to fill the gap the Aurignacian division has been adopted.

It is said to be characterised by a less finished style than the ensuing Solutrian lithic industry. Many pieces of the cruder Mousterian type are still found with it; the bone, in the shape of points with a transverse basal notch, begins to be used, together with "double" stone scrapers with secondary trimmings (*i.e.*, scrapers of which both ends could be used); boring tools, burins are found, for here begins the dawn of sculpture in the shape of gravings, and also that of painting in the shape of petroglyphs.

The conclusions drawn from the stratigraphical evidence that led to the acceptance of the Aurignacian finds of France as older than the Solutrian, and the latter as having preceded the Magdalenian are doubtless justified. But what is sometimes true on this side of the Alps, is often erroneous on the other, and it seems as if the Aurignacian proves now in Poland and elsewhere to be quite equal in finish to the Solutrian.

As far as the South African lithic methods go, and leaving out the bouchers of the Stellenbosch and other types, it may be taken for granted that a Mousterian facies is found. It cannot be said that evolution led generally to the adoption of this great advance, *i.e.*, trimming on each side, and secondary trimming of edges, yet we have instances of crude imitation in that direction. Moreover, we have also, and apparently simultaneous or coeval, bone; and lastly, Tardonian, or early Neolithic, in the shape of "pygmies." In fact, these pygmies are connected here with the ostrich egg-shell bead industry quite as much as the Magdalenian is associated with the Reindeer epoch.

Had flint been available as material instead of quartzite, indurated shale, silicious quartzite, chert or chalcedony, it is probable that the workmanship would have greatly resembled that of Europe. But on that account, perhaps also for other reasons, the South

African lithic industry, which, with the exclusion of the palæoliths, is so plainly of a Mousterian type has nevertheless what may be termed an African facies.*

I have alluded in Chapter VI. to scraper-knives found together with bouchers in such a position that doubt as to the two being coeval is well-nigh impossible, and on the evidence of the bouchers these scrapers must be considered as being also Chelleo-Mousterian, that is to say, representing this type of culture.

But on the surface, where no indication as to the age or date of deposition is obtainable, we find, seldom isolated, and often with remnants of cores or small spalls showing that they have been fabricated on the spot, scrapers, the technique of which is, I think, well illustrated by the plates accompanying or rather supplementing this paper.

It is not only on the surface that these remnants, or effective implements, are met with. They are found in kitchen-middens, in rock-shelters, and in caves.

For several reasons, such as difference in the shape and material of which they are made, or in technique, they may be divided into sub-types, which do, however, occasionally commingle and which I term the "Littoral" and "Inland Districts" respectively.

Littoral Type.—In the Cape Peninsula there are many small depressions which contain fresh water at certain times; round these vleis one is sure to find implements, mostly small, like those of Figs. 118 and 120. Occasionally examples of the best Solutrian type met with in this country are also discovered. The lance-heads of Fig. 110 show on the obverse and reverse a secondary chipping so carefully done, an advance so great in the process of hafting, that it becomes doubtful if the technique is not one that is altogether foreign to that of the aborigines.

Have we here, then, a corroboration of the famous, yet controversial, Egyptian Periplus? Have these splendid points which so very greatly resemble the best specimens from the Fayoum been made on the spot by mariners wrecked or temporarily stranded, or by adventurers seeking pastures new?

Rare indeed are these entire specimens, nor are the fragments numerous which show so well that when used as lance-head the local material broke easily at the edge of the hafted part, a fracture due perhaps to the thick hide of the Hippopotamus, Rhinoceros, and Elephant, the remains of which are not uncommon in the parts

* Cf. Foureau, *Mission Saharienne*, Paris, 1905. Zeltner, "Note sur le Préhistorique Soudanais," *L'Anthropologie*, 1907.

where the implements are occasionally met with (*cf.* obverse and reverse Cuts 1, 2, 3, 5 of Figs. 110 and 112). So far, only one example of the highly finished javelin-heads, Cut 8 of Fig. 110, has been found beyond the Cape Peninsula, namely, in the Berg River valley, close to Simondium, where palæoliths abound. And together with these lance-heads trimmed on both sides we find examples of truly Mousterian type, that is to say, trimmed on one side only (Figs. 111 and 113 showing both sides). The material is the same, the technique appears to be similar, and yet only one face is pared. Occasionally great care is devoted to this part, as in Cuts 2 and 5, but the other face with its largely bulging bulb of percussion is as Mousterian in shape as any example we possess from the Moustier, or is to be seen in the St. Germain Museum, in Paris.

Unlike the highly finished lance-heads which have hitherto been found singly only, these last-mentioned implements are found together with rude ones made of the same hard surface quartzite, a material forming at the present time. Most of them obviously are scrapers.

The notched Cuts 1, 2, 3, 5 of Fig. 118 are interesting because they probably fulfilled the same purpose as those in Fig. 138, which are from the Karroo and elsewhere, namely, paring into shape the piece of wood used for making a bow.

The serrated edge of Cuts 8, 9, 10 of Fig. 118 suggests that they were used as saws. While the notch of Cuts 1, 2, 3 are on the left of the obverse part of the scraper, that of Cut 4 of the same Fig. is on the right, as if the maker was left-handed.

Tools of this rough type, made of the same material, are to be found all along the western coast from Simon's Town to Port Nolloth, but seldom far inland. They abound near the middens of that part of the coastal belt, and they are found there together with the "pygmies." On the Cape Flats they are, as I have already said, very numerous, but they always overlie the iron-stone gravel, whereas under this gravel, or in the layers of the gravel, small bouchers, or large flakes are occasionally found.

Rough indeed is the method of manufacture of the Cape Flats implements. As far as I know, none has been found that shows unmistakably traces of secondary trimming, with the exception of the highly finished examples that are figured in Pl. XIV. and the tiny nucleiform scrapers, Fig. 130. But with these others are found that plainly show decadence in the exercise of the skill, until the more primitive style has again been reverted to. Of these examples

it is very doubtful if, when blunted by use, the opposite cutting or scraping edge was ever made to serve.

Inland districts * *Type*.—If we leave the littoral and examine the Mousterian type of the inland districts, we find analogous cases of crude and better finished tools; but if none has as yet been found to be completely trimmed on each side, that is to say with the complete removal of the bulb of percussion, we meet occasionally with well-finished ones. Cut 1 of Fig. 114 from Swazieland corresponds to Cut 2 of the same Fig. from the Cape Flats; the long knives of Fig. 106 from Aliwal North are very elegant and very serviceable tools, and Mr. J. P. Johnson has figured a scraper from the Embabaan Valley, in Swazieland, partly chipped on the reverse side but with the bulb of percussion left, which is probably one of the finest pieces of the "up-country" type as yet found.

But the material is now changing. It is no longer the silicious sandstone of the Cape Flats which is such an indication of the locality; it is an indurated shale that cleaves readily, lydianite, cherty material, jasper, chalcedony, or white quartz, and now we meet with a secondary kind of trimming which can compare only with that of the Aurignacian turning into Solutrian. In the Stormberg, Herschell, the Free State, Griqualand West, a part of the Western Karroo, and even occasionally on the Western littoral of the Cape, we meet scrapers like those of Figs. 123 and 128, in nearly all of which this trimming is at one end.† The "bord abattu" is not accidental, and in many examples, especially those of moderate size, it is the thicker part of the flake which is thus reduced into a bevelled shape. When moderately large, these scrapers answer admirably for removing the particles of flesh adhering to a flayed skin, but was this their intended purpose? They greatly vary in size, and examples of Figs. 130 from the Cape middens, minor tools among already minute ones, could hardly be said to have fulfilled this function. Cut 1 of Fig. 131 from Smithfield, Orange Free State, is one of the very few examples known to me that show secondary trimming on more than one edge. In Cuts 3 and 4, given here for purposes of comparison, the chipping of edge is not intentional, but has been produced by use. Cut 2 of the same figure is even more evenly treated all round than Cut 1 and is from the same locality (Queen's Town, Cape Colony) as Figs. 125, 126 and 127, but in spite of the secondary trimming treatment it cannot be compared with a

* This type is not restricted to the inland districts, it is occasionally found along the coastal belt east of Algoa Bay.

† Somewhat in the manner of some of the Magdalenian scrapers.

Solutrian scraper. Fig. 125, both faces of which are represented, has undoubtedly been worked intentionally into a "tang," but not so the serrated tool Fig. 126 nor Fig. 127, and it is impossible to decide whether we have here a case of progression or one of regression. Two pedunculated tools nearly similar to Fig. 125 were discovered at Cradock, and another, which was unfortunately lost, came from Queen's Town.

The bevelled scrapers are never large, especially if we compare them with the flake-knives, but Fig. 132 of Pl. XVI. is quite an exception. It is from Matatiele, in the Cape Colony, and the secondary trimming on each side of the edge is very conspicuous. It is difficult to understand the purpose for which this large, moderately thin implement was intended. It is 210 mm. long, 85 mm. wide, and 23 mm. thick. It may have been hafted laterally in the manner of a Basuto battle-axe.

These bevelled tools are seldom found in the Western part of the Colony, in fact, I know of none of the same size, although the diminutive ones in Fig. 130 approximate them; but they abound in the Karroo, and are met with in the Orange Free State, Griqualand West, and in the Southern parts of the Transvaal, but I have not seen any from Southern Rhodesia, Natal, or the N'Gami Region, and, so far, it is not unsafe to say that the technique is that of the "pygmies," many of which have, in spite of their small size, been subjected to a secondary trimming, more difficult, perhaps, to execute even than the bevelling of the nucleiform minute scrapers of Fig. 130; *cf.* also the bevelled agate chip, Cut 1 of Fig. 135, Pl. XVII.

Yet, in spite of the undoubted skill displayed in the production of these stone tools, the progress seems to have been checked; the manufacturer has never conceived the method of paring the tool on both faces as the Aurignacian and the Solutrian makers did, and thus on pure lithological grounds it may be asserted that the South African industry, which I term Neolithic, has, so far as the "points" are concerned not proceeded beyond the Mousterian type.

But, just as in the case of the Chelleo-Mousterian type, bouchers and scraper-knives, the evidence as to the age of those scrapers which we find nearly always associated with minute flakes and diminutive piercers, borers, or drills, which I range among the "pygmy" or "Tardenosian" type of Rutot, is unsatisfactory. It cannot be ascertained, because, whereas there is no proof that the palæolith, either Chellean, Acheulean, or Mousterian was used by the Aborigines in historical times, the same cannot be said

of many of the smaller implements that retain still a Mousterian facies, as the following examples show

Figs. 124 and 129 are made of lydianite; the first example is greatly polished, in all likelihood by eolian agency. Fig. 129, of a shape and manufacture absolutely identical, is made of green bottle-glass. It is from Pearston, in the Cape Colony, and was found with other rough scrapers. We know that the town of Pearston has not been long founded.

Some eight years ago Rev. W. A. Adams submitted to me several examples of bevelled scrapers greatly resembling Cut 12 of Fig. 123, which he collected at du Toit's Pan, close to Kimberley, in Griqualand West. They are made respectively of green bottle-glass and of thick plate-glass. They are as carefully bevelled as the indurated shale, agate, or quartz implements of the same style of manufacture. Now Kimberley and du Toit's Pan date from 1870, and it is highly improbable that plate-glass was introduced there before 1880.

When treating of the pygmy flakes or borers, or of some of the Cape shell-mounds or sand-dune middens, it will be shown that implements have been found lying together with various objects of European manufacture.

That South Africa was partially in the Stone Age some four or five hundred years back, and most probably even later than that, must needs be accepted as an established fact.

A characteristic *trait* of the culture of the Aurignacian-Solutrian man is his ability to reproduce by pigment on parietal (rock) surface, or even occasionally on water-worn stones, images of the scenes that appealed to him, or to grave on the walls, or the floor of the recesses he occupied, and more numerous perhaps on bones of mammals, figures, often realistic indeed, of the animals he chased.

We have here also presentments which compare with the artistic skill of the Solutrian man. Our rock-paintings are inferior as a rule, but not always, to those found in Southern France or Spain, whilst our rock-gravings are, in many instances, far superior.

But comparison of the bone- or stone-implements found in, or near, the famous Altamira Cave, with those of our rock-shelters or caves where paintings or gravings occur, reveals a great dissimilarity, greater, however, in the stone than in the bone tools.

The gravings here are in the open. In a few cases we can associate with them palæoliths of the Chelleo-Mousterian type; also in one instance gravers of the Mousterian long, scraper-form.

With our paintings,* on the other hand, are associated simple, small flakes, of a type and size which are met with nearly everywhere, but *no* palæolith.

In the Matoppos, Southern Rhodesia, the paintings are getting fainter every year, and the place is too much exposed for these glyptics to be of great antiquity. The stone relics left by the aborigines, the authors of the paintings, are represented in Pl. XVII., Fig. 133.

Fig. 134 represents the implements discovered at the foot of a rock-shelter, hardly, however, deserving this name, on which are found remarkable paintings, at Modderpoort, Orange Free State.

Fig. 136 is the representation of forms similar to those of the three preceding Figs., found close to a cave-shelter full of paintings.

A comparison with the shape of these tools and those of the Cape Flats, especially that of Cut 2 of Fig. 136, with the same number in Fig. 120, Pl. XV., is very instructive. The material used differs, but the technique and also the purpose is the same. The notched scraper, Cut 10 of Fig. 134, from Modderpoort, has served the same purpose as the more broadly or crescentic ones in Fig. 138 from the Cape Karroo, and the Cuts of Fig. 135 from a Free State rock-shelter where no paintings occur show that, with the exception of Cut No. 1, a bevelled edge specimen, the others can match in size and shape many that have been found in rock-shelters where paintings are displayed.

The technique, poor as it is, is the same, and however old the survival may be, there is no reason to endow these relics with a great antiquity, because the paintings with which they are connected cannot be of any antiquity.

Nevertheless, in spite of the evidence adduced, it would be unsafe to conclude that only these most primitive chips are co-related with artistic skill.

Text-fig. 8 is one that goes far to disprove this theory. It is that of as fine a Mousterian-type scraper as any found in South Africa. It was discovered in a cave full of well-preserved paintings. With it was a small, round, dolerite pebble, of the same size as Cut 1 of Fig. 185, and which, from its appearance, might have been a muller for preparing paint or poison. On the floor were a number of broken reed-shafted arrows, some retaining still the cement that served to fix the feather; the sinews binding the notch are also well preserved. Some of these arrows, more diminutive than the others,

* These paintings are usually found in, or close to, rock-shelters. None has, as yet, been found in deep caves.

are tipped with long pieces of hardened wood, and they, together with a fragment of a bow, plainly pared by a stone scraper, but almost tiny, seem to indicate that they were used for practice by children.

These broken reeds tell a tale: the storming, or destruction by surprise, of a lair of Bush people in recent time. And therefore this highly finished tool dates from yesterday. Its finish contrasts



FIG. 8. $\times \frac{4}{5}$.

singularly with the rough scrapers in Figs. 133, 134, 135, 136, or 138. Yet the culture of the people is the same as that of which the other rock-shelters give evidence.

Associated with the scrapers, notched, lanciform and saw-like, which, as I have already remarked, and as the illustrations plainly show, are nearly always of a moderate size, and often small, there is an admixture of much smaller ones which show no secondary trimming in many cases, Figs. 135, 151, 140, whereas those of Figs. 144 and 149 show this kind of trimming in spite of their minuteness, as do also the examples in Fig. 143. The facies is doubtless not unlike that of many burins or drills of the Magdalenian period.

It is generally admitted that stone implements of the type here figured were held in the hand. But that some were hafted, and in that manner made more serviceable, is proved by Fig. 150, of Pl. XIX.

Two examples of that sort are now known. The specimen figured is in the Museum Collection.

Both were found in the sepultures of the Outeniqua caves. Details of the find of our example will be found in Chapter XVI.

The wooden handle is greatly decomposed. Had it not been carefully protected from atmospheric action from the time of its discovery, it would have crumbled to dust; even the first exposure to the air caused it to break. It is so saturated with sodium chloride, that even in the few days it was removed from its glass case for reproduction by photography, an efflorescence of salt was produced.

The ovoid attachment of gum-cement is very large in proportion to the size of the handle. The stone part is roughly trimmed, being somewhat in the shape of a core, and is embedded in the cement to about one-half of its own length, as far as one can judge. The very sinuous edge had been broken before burial probably, as indicated by the comparatively fresh fracture.

My first impression was that this hafted tool was that of a ruler or medicine-man, somewhat on the lines of the *bâton de commandement*, and I am inclined still to look upon it in that light, because as a serviceable cutting or graving tool it could not prove of much service.

This mode of attachment which so greatly resembles that of the Australian Aborigines, must, however, have prevailed perhaps more commonly than we imagine. It would certainly facilitate the handling of the very small chips on which care has certainly been devoted.*

It has also been resorted to in the three arrows represented in Fig. 142. On Cut 1 is a lozenge-shaped, flat lump of cement of apparently the same composition as that of Fig. 150; on one side there remains a small chip of white quartz inserted with the sharp edge outwards from the middle part of the cement to near the front, but without reaching it; the chip set on the opposite side would reach the very tip; and the other side being similarly provided would thus complete a sharp triangle, but it is missing, having dropped out of the fastening material. Cuts 2 and 3 are similarly fashioned, but only a tiny piece of white bottle-glass forms

* Cf. Etheridge's and Whitelegge's "Aboriginal Workshops on the Coast of New South Wales, and their Contents," *Rec. Austr. Mus.*, vi., 1907.

the tip of Cut 2; and that of Cut 3, made also of a small piece of glass, is partially broken off.

These examples should not, however, lead one to believe that all these moderately large scraper-knives or others were hafted in this manner. Many examples have been found in situations which, by the accompanying relics, are proved to be not old enough for the cement to have crumbled away from the action of time. A good instance of this contention are the objects represented in Fig. 137, and the tools used for producing the same. We can date the introduction of gun and spade in the district when the examples come; and so recent is it that it is impossible that the gum-cement should not have been preserved had the small tools been hafted.

CHAPTER IX.

TARDENOSIAN TYPE.

"PYGMY SCRAPERS OR DRILLS."

An indubitable fact is the tendency in the manufacture of the points, scrapers, or flake-knives towards a reduction in size.

We may safely accept the explanation, that the white quartz or agate examples represented in Fig. 151 are intended for the side-pieces of arrow-heads. Those of Fig. 140 may likewise be considered as such. Some of them may have been points also, because the bulb of concussion still left is too small to prevent them from being held firmly in the gum-cement.

But if we turn to Fig. 143, the use of these small tools so carefully trimmed on one side, tools which are not of the true crescent-shaped European type, whereas Cut 1 of Fig. 149 is nearly so, remains conjectural. Not conjectural, however, is the purpose of the small, even, minute implements represented in Fig. 144. They, like the upper row of Fig. 146, are the tools used for boring holes in the tiny beads of ostrich egg-shell which are represented in Fig. 146, and were found together with the borers. I purposely term them borers or drills instead of punchers, because the perforation is executed from both sides. These flat beads are represented in all stages of manufacture in Fig. 146, and all the borers show traces of secondary trimming apart from the serration produced by use. But for the preliminary paring of the fragmented egg-shell, small, simple scrapers have also been used, because the examples in Fig. 141 are found where the aborigines set their workshop, and together with these scrapers are also found the nuclei, or cores, of Fig. 139.

The examples here figured are from the sand-dune middens of the Cape Peninsula and other places on the coastal belt. But they are not restricted to that part of South Africa.

These "pygmies" are found all over the country, and their

primary purpose is the paring and boring, in a word, the making of ostrich egg-shell discoidal beads. Few rock-shelters of inland districts are without them. The specimens in Fig. 149 are from the Orange Free State; in Fig. 145 from the northern parts of the Cape Colony, &c.

In the enormously wide stretches of sand which form the coastal belt of German South-West Africa, the Bushman has still, among his most restricted belongings, borers like those of Fig. 147. Made of an almost intractable chalcedony rock, like that from which the Zambesi River scrapers, Figs. 119, 121, 122 in Pl. XV., and even palæoliths, are manufactured, he has with infinite pains succeeded in turning them roughly, perhaps, but effectually nevertheless, into a drill for boring the egg-shell bead.

But these borers are not always so uncouth. From Conception Bay, and round Walfish Bay, we have finished drills, some of jasper, some silicious, as perfect as any in Fig. 144 of Pl. XIX. Exposed, however, to periodical winds, that blow without intermission in the same direction and with the greatest violence for several months of the year, these tools have been reduced in spite of their minute size to the wind-worn shape known to Geologists as "*Drei Kanter*." Yet this wind-worn shape does not afford any clue as to the age, because the violence and the duration of the wind is such that the process might take only one year to produce.*

But it is not there only that the violent winds smooth the faces of these small borers. Fig. 148 represent similar implements from the sand-dunes of Mossel Bay which have also been turned into "*Dreikanter*s."

And thus, these "pygmy" implements of South Africa are connected with two industries, the one for tipping poisoned arrows, the other for ostrich egg-shell bead-making.

As burins they might have also been used, but it must be remembered that the only ornamented bones or bone tools found hitherto are Cuts 1 and 2 of Fig. 194 in Pl. XXVI. This seems to indicate that graving on bone was not often resorted to.

The problem presented by these "pygmy" tools occasionally with, but often also without, the secondary chipping is as much complicated as that of the palæolithic bouchers. They are found in

* It is in these sands that diamonds are found. Mr. W. M. Adrey, who presented these specimens to the Museum, tells me that the noise produced by the small pebbles displaced by this wind is quite audible. It is not only the implements which are reduced to the *Dreikanter* shape, but also all the jasper, agate, and other pebbles.

Africa from South to North, and were first noticed, if I mistake not, in India. They occur in Europe, in Austria, England, France, &c. The resemblance of ours to the European is such that M. Cartailhac to whom I submitted some examples, wrote: "I admit that it is greatly surprising to find in your series small pieces akin to ours. Your minute flakes with secondary trimmings (*petites lames à bord abattu*) might be mistaken for (*se confondraient avec*) those of our French deposits; but the neolithic of Japan affords surprises of a similar kind."

That some of the examples figured in Pls. XVIII.-XIX. were intended perhaps as burins or gravers, but more certainly as borers or drills, and also as parers, of ostrich egg-shell beads, or cutting-pieces to be fixed by gum-cement to poisoned arrows, I have already explained. But it is not certain—at least, the finds made hitherto do not substantiate the belief—that these pygmy implements from elsewhere than Africa served the purpose they did in South Africa. The ostrich was not found in early neolithic time in Europe, nor can I find, in the mural paintings or engravings of Central and Southern Europe, figures that can be said to resemble it; moreover, no trace of this bird has been as yet discovered in those deposits which we ascribe to the early, middle, or late Pleistocene of Europe.

It may, therefore, be taken for granted that the boring or paring tools were not fabricated in the Northern Hemisphere for the purpose of making ostrich-shell beads. But in the Palæolithic deposits of Europe, shells, marine or fluviatile, were perforated in a manner implying clearly that they were suspended or strung for ornament,* and teeth were bored for the same purpose; and how could they have been so treated but by the use of these very drilling tools.

The deposits or "stations" where these European "pygmies" occur are usually near the sea, along rivers, or close to lakes and ponds. It is claimed for them that some were used as hooks, others to barb harpoons. It is clearly proved that, as far as the French pygmy deposits are concerned, whenever culinary remains are preserved, they show that the makers fed on fish and molluscs.

The crescent-shaped implements of Pl. XVIII., Fig. 143, both edges of which are, however, very sharp, and thus differ from the *quartier d'orange* shape of Fig. 149, are found close to the sea,

* A kind of short petticoat covered or adorned with the shells of *Nassa neritea* was discovered with the skeletons of two young Troglodytes inhumed together in the upper floor of the Grimaldi caves; two found on the lower floor, which proved to be of the negroid type, bore round the head and the wrist, respectively strings of the same shell.

or in the neighbourhood of "vleis," in the South-Western part of Cape Colony. Mr. J. P. Johnson has figured some "highly characteristic crescents," as he terms them, in what he calls the river deposits of Riverton Island, on the Vaal River.

It is not at all unlikely, with the method of gum-cement which we now know obtained, that these semi-crescent-shaped tools with one cutting edge or two were used here also for barbing arrows or perhaps harpoons. No evidence that they were used in that manner has so far been obtained, it is true, either here or in Europe, but that such a form of attachment existed here is proved by the arrows in Pl. XVIII., Fig. 142.

That the majority of our pygmies are borers or drills, or parers of ostrich egg-shell discs is patent in Algeria and in the Soudan,* whence many specimens are exact duplicates of ours, the "pygmies" served there the same purposes, and were manufactured in all likelihood by the same race of men.

These pygmies of Europe are considered by some to belong to the initial period of the Neolithic Age. With us they have lasted to this day, and are most usually connected with the !kwès, grooved mortars, bone tools, pottery, &c.

In the Aurignacian period of Europe, however, we begin to find chips and nuclei which are also singularly like South African ones; the published figures† of the finds in the stations of Hundesteig, Krems, Southern Austria, correspond altogether with those of our Figs. 139 and 145, and many with those of Fig. 140.

* Cf. Debruge, *Les burins et les silex de forme géométrique de l'Atlas* "L'homme préhistorique," 1905.

"Les stations sahariennes ont fourni à M. Foureau de nombreux fragments d'œufs d'autruche les uns très délicatement gravés, les autres taillés en forme de petites rondelles perforées à leur centre. Pour travailler ces coquilles d'œuf, l'ouvrier eut fréquemment brisé son œuvre avant de l'avoir achevée, et les petits silex à dos abattu répondaient fort bien à cet usage." Verneaux, in Foureau's *Mission Saharienne*, pp. 1109-1110.

† Hoerns, "Der diluviale Mensch.," p. 119, Fig. 44.

CHAPTER X.

BONE TOOLS AND STONE SHARPENERS.

Bone- and stag-horn tools were greatly in use in the Solutrian-Magdalenian times, but bone tools have not prevailed in the South African lithic epoch. This is the more surprising in view of the undoubted Aurignacian and Magdalenian facies of many of the stone pieces.

The scarcity of the find seems to justify the assumption that the utility of bone as a material was not quite realised.

These bone-tools can be arranged in three categories: Knives, awls, arrow-tips. No bone ornament, either bored for suspension or otherwise, has, as yet, been discovered that can be connected with the stone industry.

KNIVES.

The knives are very scarce. I know of four examples only, and all have been found in shell-mounds in the open, or in cave-shelters. They were possibly used for detaching the molluscs from univalve or bivalve shells. Cut 2 of Fig. 193, Pl. XXVI., is very blunt, and bears numerous traces of short, sub-transverse incisions made plainly by a stone scraper-knife. These incisions must be posterior to the shaping of this tool by polishing. Cut 1 of Fig. 172, which, like Cut 2 of Fig. 193, is from one of the Outeniqua-Tzitzikama Caves, has the edges plainly ground. Cut 172 may have been a knife, although it may also have been used as a spear-head. It is made from the rib of a ruminant, is thin and smoothed on one face only. I know of another exactly alike, but smaller, found with a number of bone awls and arrow shafts in a rock-shelter.

AWLS AND ARROW POINTS.

Awls or bodkins are more numerous than either knives or arrow-tips.

This is the more surprising considering that these awls were used for stitching skins together—which is undoubtedly the case—for the aborigines had close at hand the hard, long thorns of several *Acacia*-trees, which would have proved quite as effective. But custom dies hard, as the whole account of our South African neolithic industry proves but too well.

An examination of these awls or bodkins shows that those from the cave-shelters of the seaboard are of a better finish and also the



FIG. 9. $\times \frac{1}{2}$.

most effective, *cf.* Cuts 3 to 7 of Fig. 193. The long awls of Fig. 194 are made of the hollow wing-bones of sea-birds, and two of these are the only objects of stone or bone known to me that show decoration.

Cut 1 of Fig. 193 is very massive. Its perfectly smoothed anterior part is difficult to explain, but it would prove useful in smoothing the hole of the !kwè, several of which were found in the necropolis where this boring tool was discovered.

Cuts 6 and 7 of Fig. 193 might have served equally well as arrow

points and as awls. I know of one similar to Cut 7 which is made of stone. It is from the Orange Free State, whence also came the first Cut on the left of Fig. 195.



FIG. 10. $\times \frac{2}{3}$.

In the inland districts shelters these piercing bone tools are not so well finished, and they may have been utilised for other purposes. The four Cuts on the upper right of Fig. 195 are flat, and these tools

may have been used for mat-making. They were found at a great depth in boring a well, in the Smithfield district of the Orange Free State.

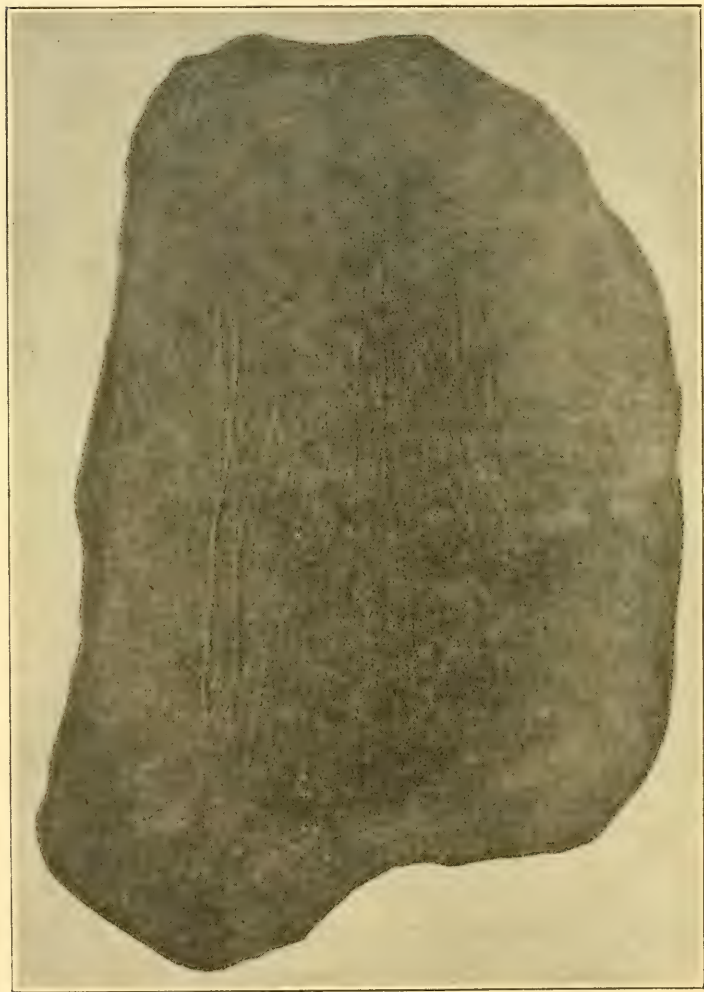


FIG. 10. $\times \frac{3}{7}$.

These bone implements will be treated of respectively in the chapter dealing with the Shell-mounds, Kitchen-middens, Caves, or Rock-shelters in which they were discovered.

One thing is quite certain, and that is, that however skilful they may have been in the use of awls, the makers were not acquainted with threading the tool, whereas the Aurignacian and the Magdalenian manufactured an extremely well-finished bone needle *with eye*.

One meets occasionally in the Rock-shelter where one or more of these bodkins occur, the whetting-stone used for sharpening the same, and the groove left leaves no doubt as to its purpose—see Cuts 2 and 13 of Fig. 185 in Pl. XXV.—and occasionally also we find on the face of rocks grooves similar to those represented in text-fig. 9, the resulting cause of which is obvious.

Text-fig. 10 represents the obverse and reverse of a sharpening stone for bodkins, which could, in spite of its size, have been portable, and, judging from its numerous grooves, it must have been a much-used part of the house furniture. It will be noticed that these grooves are all narrow and never straight; this conclusively shows that they were caused by the production of fine points only.

ARROW-TIPS.

One of the main purposes to which bone was put seems to have been the manufacture of arrows; its use for this purpose was perhaps more general than its employment for awl making.

The Bushman arrow consisted of a reed varying in length and also in size,* notched at one end, and having inserted at the other a rounded piece of heavy bone; the part round the notch and that near the top being strengthened by lashings of fine sinew or gut. In the reed is inserted a rounded piece of heavy bone, more or less sharply pointed at each end, at the tip of which is fixed a triangular piece of iron kept in its place by a resinous cement. At a short distance from the bone part of the shaft is a quill barb, and the whole is besmeared from the iron tip to half the length of the bone shaft with a thick layer of what purports to be poison (see Cut 1 of Fig. 142, Pl. XVIII.). This barb assists in keeping the poisoned part in the wound if an attempt is made to dislodge the arrow, and the bone shaft comes off easily from the reed shaft. The triangular iron-piece comes off as readily from the tip of the bone part, and the extraction of the poisoned part becomes thus very difficult and permits of the greater diffusion of the poison in the circulatory system of the victim.

That the use of the triangular iron tip is comparatively recent

* There were two kinds of bows and arrows, with quivers appropriate to the size of the latter. The long bow reaches a size of 1 m. 65 cm., the average height of a Bushman, and the arrow 82 cm.; the short bow is less than 1 m. and the arrow 40 cm.

would seem to be proved by the illustration Fig. 142, where the arrows are respectively tipped with quartz and glass chips. In Cuts 2 and 3 of the same figure heavy wood has been used instead of bone. But this is an exception, due perhaps to special circumstances. It may be taken for granted that that part of the arrows was made of bone.

WHETSTONES.

These bone arrow pieces are, however, rarer than the awls, unless some of the cylindrical bone bodkins, which I take to have been awls, have been used as arrow-points, which is not improbable; but the grooved stones serving for reducing the piece of bone into the required shape are not uncommonly met with, and they complete the series of the South African neolithic (modern) industry.

The groove is always longitudinal; the shape of the stone itself extremely variable; and it may also be said of these stones that no two specimens are alike. That many formed part of the "kit" of the hunter is probable, as the care bestowed on some of them is great. Some have one groove only, Cuts 4, 5, 7, 8 of Fig. 171, Pl. XXIII.; others have two, Cut 6; Cut 3 shows three grooves on each side; the flat specimen, Cut 1, has several grooves on both faces. These grooves are too deep to admit of their having been used for fashioning sharply pointed awls.

It has been suggested that these utensils were arrow-straighteners. Not only is it forgotten that the shaft of a Bushman arrow is made of reed, and was therefore straight, but not one of the many examples examined by me has an absolutely straight groove, and this groove is never deep enough to accommodate the whole circumference of the reed-part of an arrow. Moreover, instead of being cylindrical and of the same diameter throughout, the ends are always pointed or narrower than the centre, and in most instances the centre of the groove is not cylindrical.

It is somewhat amusing to read of the "should have been" process.

Thus Goch: * "This is used to straighten bone and reed arrows, by heating the stone red-hot, and placing the arrow-shaft in the groove, then rubbing another hot pebble with pressure up and down it, and so taking out the twist of the reed." The author forgets to tell how the rubbing hot pebble was held.

The explanation given by Dunn would seem to be more plausible: † "These stones are used by first heating them in the fire, and then rubbing the fresh-cut reed along the groove until it is

* Journ. Anthr. Inst., xi., pts. 1 and 2, 1881.

† Trans. S. Afric. Phil. Soc., ii., 1880, p. 20.

rendered sufficiently straight." But he proceeds to figure two such portable stones the groove of which, owing to the tapering at each end and greater depth in the centre, could not have fulfilled this purpose.

Schönland suggests that a stone which had no less than eight grooves was used for rope-making. "It reminded me of a wooden tool which rope-makers use. They let the strands, which they wish to combine into a rope, run along the grooves, and while it is held steady the turning wheel can only twist the strands between the wheel and this implement."*

But what of the stones with only one groove, or of the more or less cylindrical ones in which the grooves are not parallel, but are unevenly spaced, and are sometimes found on one-half only of the convex surface?

The explanation of these grooves needs no such speculative theory, for the reasons I have given. I have examined a very large number of these relics. They have all served as whetstones for awls or bodkins, or for rounding into shape, or sharpening the bone part of the shaft of arrows; and whereas the sharpening of awls was often done on any rock *in situ*, the whetting-stone for bone shafts is always of a portable size—at least I know of no other.

BONE TOOLS OTHER THAN KNIVES, AWLS, OR ARROW-SHAFTS.

The bone tools known hitherto seem to be restricted to the purposes I have explained.

Occasionally, however, we find bone relics of another kind.

Fig. 184 of Pl. XXV. represents the tusk of a hippopotamus, split longitudinally in the centre. It will, however, be seen from the figure that not only one of the ends is rounded, but also that the other has been thinned for prehension by a small hand—a peculiar feature of the Bush people. The hacking necessitated for that reduction has been plainly made by a stone implement, and the weapon, owing to its weight and sharp edge, is not at all a contemptible one. The example was found at great depth in a river bank. Tusks of hippopotamus usually split longitudinally in the manner here shown after long exposure. But we have in the Collection a sub-crescentic one, smaller than Fig. 184, the edges of which have been artificially pared by grinding or polishing in such a manner as to make it a very useful tool for braying skins, an explanation which is, however, speculative.

* Rep. S. Afr. Assoc. Adv. Sc., 1903, p. 306.

CHAPTER XI.

ORNAMENTS.

The records of the Cape Settlement, and the narratives of the early travellers testify to the fondness of Hottentots for ornaments, especially those made of copper.

Sparrman mentions and figures the ornaments that some Hottentots wear: strings of marine shells, which from the illustration appear to be *Nerita albicilla*, L., and also a circular, diadem-like head-dress of leather adorned with three spaced rows of "cowries," but no allusion has, as far as I know, been made to that peculiar object of ornament, the ostrich egg-shell discoidal bead.

Had it been in use among the Hottentots, the travellers would in all likelihood have mentioned the occurrence of a decoration so unlike any other; the absence of these beads would thus seem to strengthen the belief that the Hottentots, whom Sparrman, among others, met, were, comparatively, new-comers in South Africa.

These disks are *the* ornament of these members of the Khoi-khoin race, the Strand Looper, and possibly the Bushman, but seemingly not of their congener the Hottentot.* Few rock-shelters, few open-air middens can be said to be without them. They are found in all stages of manufacture. The smaller kinds are met with along the coastal belt only. We have them round the loins of an exhumed Strand Looper skeleton at Blaauwberg, or on the ankles of the skeleton of a child from Coldstream, but we have them also of small size, and adhering still to human remains, from the Orange River Colony.

Those found up-country are usually more than twice the size of the coast-belt ones; the hole is not so broad in proportion, and owing to their larger diameter the periphery is more regular. At

* But worn round the waist, in the case of women, they may well have escaped the attention of early travellers repelled moreover by the absolute body filth of the aborigines, a filth to which all testify.

the present moment they are still manufactured by the Ba-sarwa, or Bushmen of the Kalahari Desert, for adorning not only themselves but also the dusky Damara or Ovampo belles,* and among the miserable tools of these most degraded, or, perhaps, most primitive people are found the rude, well-nigh shapeless, chalcedony borers, that are represented in Pl. XX., Fig. 147.

But apart from these flat, perforated egg-shell disks, we find ornaments which have a character connecting them with the !kwès, owing to their mode of perforation, the importance of which is greater than would at first appear.

Thus the bead, Cut 3 of Fig. 186 (Pl. XXV.). It was found together with the club Fig. 152 (Pl. XIX.). The boring is the same as that of the !kwès, that is to say, it was begun at each pole. The same obtains for Cut 2 of the same Fig. It was discovered, with two more, I am told, in a grave near Vryburg. Both these examples are unique. But Cut 1 or Fig. 186, instead of being made of stone, is an earthenware bead, which, however, assumes a shape not very dissimilar from that of No. 2; it does not present the same kind of perforation, because it is made of clay built over a reed, which disappeared, of course, if left in position, in the baking process,† or, and this is a simpler explanation, the clay when fashioned to the requisite shape, was perforated from end to end before baking.

This mode of perforation beginning at each pole, or extremity, to meet in the centre, is repeated even in that of the ostrich egg-shell disks, which are of themselves so thin. It has been followed in the nacreous shell-beads with two parallel holes, Fig. 187, Pl. XXV.; in the bead or pendants, Figs. 206 and 207, Pl. XXVII.; and if it has not been resorted to in shells forming a (?) necklace, Fig. 206 of Pl. XXVII., it is because of the impossibility of completing the boring from the inner part. These holes are, in consequence, very roughly punched.

As ornaments also we shall have to consider the flat disks 1 and

* We have in the Collection a waist-band, 28 cm. in diameter, consisting of 27 ropes of these strung egg-shell beads, twelve of which go to the inch. A. A. Anderson ("Twenty-five Years in a Waggon," 1887, i., p. 280), estimates to 8,000 the number of these beads required to make one set of ornaments worn by a young bush-girl.

† We have now two such ornaments. The second is shorter than the one figured. Three were found, while digging or ploughing a field and a garden respectively; in the Stellenbosch District, Cape Colony. From the Record Book of the Museum I find that a "clay-bead" was found together with Cut 3 of Fig. 186, but it seems to have been lost or mislaid.

2 of Fig. 156, and in spite of their thinness, they have likewise been bored from both sides for suspension.

Boring a hole in a stone is not one of the most easy of undertakings, and when the stone is of a diameter exceeding 11 cm., as in many of the !kwès the difficulty is enhanced when the bore is started at each end.

In South Africa, however, one cannot but be struck by the primitiveness displayed by the makers, a primitiveness that seems to denote:—

1. That they were unacquainted with the bow-drill.
2. That the method was adopted on account of the great thickness of the !kwès.
3. That they were not inventive enough to devise a simpler method, such as punching, for thin flat surfaces.

The beads figured are diminutive tikoës. The ostrich egg-shell disks are not. For the manufacture of both, however, diminutive drills have been made.

In the perforated stones of Chile, *the same system of perforation was in use*, and it is, or was, followed in New Guinea.

If we continue our comparison with the ornaments of the Mousterian, Solutrian, and Magdalenian periods of Europe, we find there: Bone and ivory pendants, beads, perforated shells for making necklaces or tiaras; stringed vertebrae of fish; perforated teeth of various animals intended for neck or waist wear, some of the teeth, mostly canines, bearing graved striæ, figures of barbed harpoons, fish, seals, &c.

In South Africa all the ornaments differ, with perhaps the exception of the perforated sea-shells of some of the Outeniqua Caves. The stone beads, with an unique type of perforation, are different; unheard of in the European epochs mentioned are the earthenware beads; the steatite and other stone pendants, Fig. 207, have a shape of their own, and so have the shell ornaments, with double longitudinal holes, Fig. 187; the olive-kernel-like beads with prospectively one or two holes, Fig. 206; the large flat stone-disks, Cuts 1-2, of Fig. 156, to say nothing of the egg-shell discoidal beads bored in the centre.

We have no ivory or bone pendants, no suspended teeth of wild animals, as if the hunter disdained to wear such commonplace objects.

Could it be that the neolithic South African race was so primitive that man himself did not appreciate ornaments?

CHAPTER XII.

THE !KWÈ, OR PERFORATED STONE.

Better known probably than any other stone implement is the perforated stone, either quite globular or partly so, flat or sub-quadrated, but with the angles always rounded, which is designated here : Bushman-Stone.

This implement, according to Stow,* was termed 'T'koe, or Tikoe, and was used to give weight and impetus to the " Kibi " or digging-stick ; it was also occasionally used as an offensive weapon or club.

Miss Dora Bleek informs me, however, that the word is "! Kwe," and that it is not used by itself, but in connection with the digging-stick, thus: !Kwè Ka !!Kha !!Ka = the stick with the digging stone; the signs ! and !! representing each a special click peculiar to the language of the " Sans." Dr. D. R. Kannemeyer corroborates this appellation, which he obtained from an old Bushman long ago, only there seems to be a transposition. Phonetically spelled it reads Ka Ka Kōwè.†

The characteristic of these stone implements is the manner in which the median hole is bored. The process of perforation is invariably begun on each side, or pole, the holes thus resulting being conical; they meet in the centre, and the bore is on that account never quite straight. The unfinished specimens (No. 1, of Fig. 161, Pl. XXI.), shows very clearly the process. But by making the initial perforations too large in proportion to the size of the already naturally rounded stone, it often broke in two before completion. This is a kind of fracture which is especially noticeable, and of common occurrence with the unfinished implement. A glance at Pls. XX. and XXI. and the adjoined measurements of the pieces will give a good idea of these implements and their relative size. But unlike

* The Native Races of South Africa.

† The *e* is long and at the same time very open, hence my use of the *grave*, instead of the *acute* accent, as prescribed by the Royal Geographical Society.

the bouchers or the muller-brayers, they are found singly. I never heard of them having been discovered either together, or in a number that suggested their gradual accumulation in mountain or hill talus, or in an alluvial deposit. Not only do they differ in this respect from bouchers, but this very difference also implies a much more recent origin. They are not uncommon in, or close to, the middens, but there they are often broken; are met on the veldt, without apparent cause or reason; are occasionally ploughed out; and I make bold to assert that there is not one district of the Cape Colony where they have not been found. They are equally numerous in the Orange Free State; but seem to be scarcer in the Transvaal, and in Natal. None has to my knowledge been found in Rhodesia, probably because they have been overlooked; they occur in the Tanganyika Plateau (Pl. XXI., Fig. 158), and Professor von Lushan of the Berlin Ethnological Museum, informs me that he has several from Kilimandjaro. They have lately been found a few miles south of Khartum, and also in North Kordofan. I am informed, although I have not been able to verify my information, that they have been met with in Somaliland.

Similar implements, perforated in the same manner, are known in Europe, and in South America, Figs. 159 and 160 of Pl. XXI., represent an example from the Atacama Desert in Chile. I am not aware that they are found in Australia, and their absence there coincides singularly enough with that of the bouchers of the Chellean-Mousterian type. But there is no corollary with the bouchers in point of antiquity. The European examples are unmistakably neolithic, and not only so, but, unlike the "pygmies," it is not possible to claim for them an early neolithic age; they have been found in sepultures associated with polished, as well as dressed, stone-axes.

The general acceptance of the use to which these perforated stones were put is that they were intended to give weight to the digging-stick, and there can be no doubt that even after the arrival of the Colonists they still served that purpose.

This is proved by the heart-rending account of Sparrman, travelling at the time (1775) in what is now the Uniondale district of Cape Colony:—

"We saw, moreover, as we rode along (especially in Lange Kloof), numbers of fugitive Hottentots of both sexes, who were not longer pursued, partly on account of their age and infirmities, and partly because it was not worth any Colonist's while to lay hold on them, as they would be liable to be demanded back by their former

masters. One of these that I passed on the road, a very old man, died (as I was told) the day after of weakness and fatigue. Most of these fugitives carried a thick, stout staff, generally *headed* with a heavy gritstone of 2 lbs. weight or more, rounded off, and with a hole bored through the middle of it, in order to increase the force of the stick for the purpose of digging up roots and bulbs out of the ground; and at the same time for piercing the hard clay hillocks, which are formed to the height of 3 or 4 feet, by a kind of ants (*Termes*), a species of insect of which the Boshiesmen's food in a great measure consists.* It gave me no small pain to see the poor old fugitives frequently wasting the remains of their strength on these hardened hillocks in vain, some other animals, that feed on ants, having worked their way into them, and consumed all their provisions beforehand."

Burchell adds his testimony:—

"We were visited by two natives, whose kraal, they said, was at some distance eastward, and who being out in search of wild roots happened to observe our track, and had discovered us by following it. One of them wore on the side of his head, as an ornament, and tied close to the hair, a circular plate of shining brass 3 inches in diameter. The other carried, what my Hottentots called a 'graafstok' (a digging-stick) to which there was affixed a heavy stone to increase its force in picking up bulbous roots. The stone, which was 5 inches in diameter, had been cut or ground, very regularly, to a round form, and perforated with a hole large enough to receive the stick and a wedge by which it was fixed in its place."

Livingstone, in his last journal, but quoting from memory, as is plainly discernible by the figure given, states: "In 1841 I saw a Bushwoman in the Cape Colony with a round stone and a hole through it; on being asked, she showed me how it was used by inserting the top of a digging-stick into it and digging a root. The stone was to give the stick weight."

In addition to this written evidence I endeavoured to find other testimony with the result that a Mr. Turner, from near Griqua Town, remembered very well Bushmen and Korannas using the "!'kwè." The stone was fastened at the *lower part* of the stick.

Mr. Bodenstein—at whose place Dr. A. W. Rogers, Director of the Cape Geological Survey, found a very large perforated stone made of steatite (an unusual occurrence), but cleft in the centre—

* The *Termes* workers are, possibly on account of their colour, called still "Bushman's Rice," in Dutch, "Rijs miero."

saw the "Vaalpense,"* use the stone fixed at the *top* end of the stick. "Men, women, and children all dug with it."

I succeeded in procuring the photograph here produced of what



FIG. 12.

is plainly intended to be an old Bushwoman using the !kwè. But these people are so eager to say, "Yah, baas," *i.e.*, to assent to

* The "Vaalpense," so-called by the Dutch, would seem to be not Bush people, but very degraded Bechuanas, belonging therefore to the Bantu-speaking race which we call generally Kaffir.

any suggestion made or question put to them, that I concluded from her physiognomy that she was also willing to please. However, when this photograph was shown to the Bushwoman of whom we took a cast, and who is represented in Pl. XXVIII., not only did she acknowledge that it was a true position, but seizing a stick she gave a most energetic display of the two or three different styles



FIG. 13.

of manipulation of the handle required for the orthodox extraction of roots. This evidence completely corroborates the use of the perforated stone as part of a digging implement, and very likely also the implement with which, or partly by means of which, the snares or game-pits were dug. But was this its sole *raison d'être*? Plainly not!

In Europe these globular stones are considered to have been club-heads. In France, and in England, as well as in Northern Europe

they are spherical or ovoid; in the Mediterranean region they are either spherical or pyriform, and better finished. The Atacama

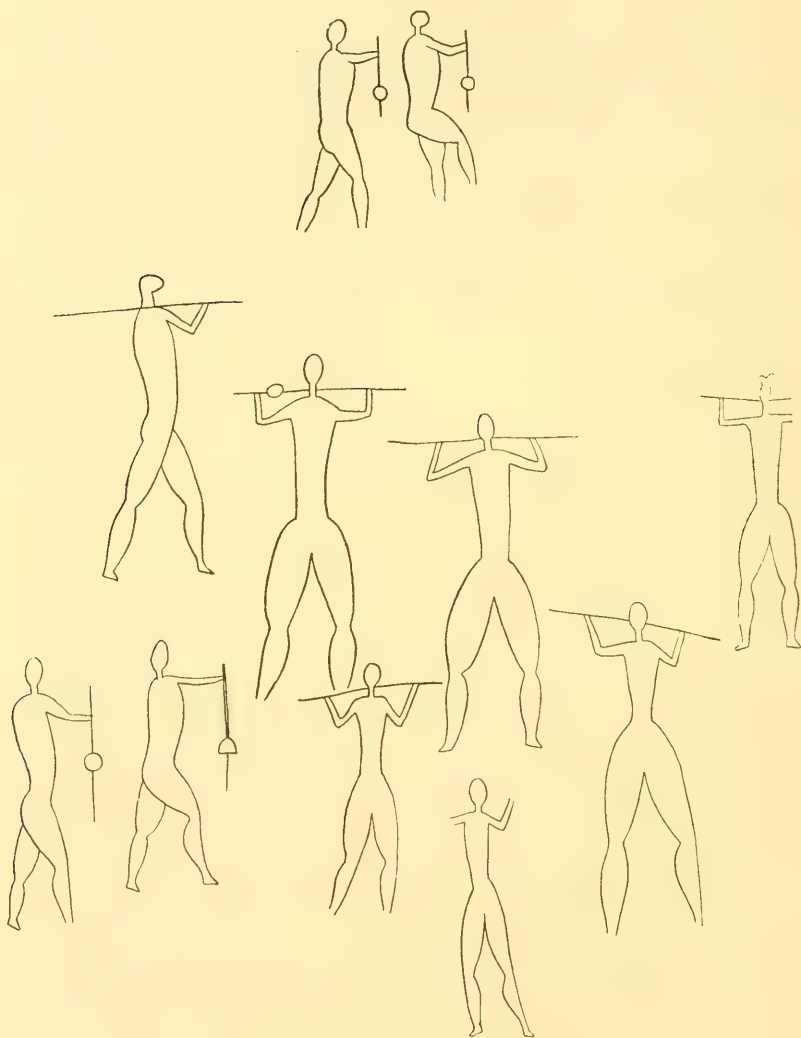


FIG. 14.

Desert specimen, Fig. 159, does not differ much in shape from South African ones, nor does the Tanganyka Plateau implement, Fig. 158, which is, however, somewhat quadrangular.

Fortunately, we have proofs that in South Africa the !kwè was not only used for weighting digging-sticks but also as club-head, and this proof is afforded by Bushman paintings from the Orange River Colony, which through the kindness of Professor B. Young, of the Transvaal University College, I am able to reproduce here.*

These parietal paintings represent Bush people or Korannas going a-digging. The women hold the stick with the !kwè in position (text-fig. 13).

In text-fig. 14, men are seen carrying the same, but in some figures the stick is there, but not the stone.†

The third scene, text-fig. 15, shows another use for the !kwè. It is now a club-head; the stick is short; the stone is affixed to the top, and the stick protrudes for a short distance.



FIG 15.

This scene is plainly a mythical one, and as such is difficult of explanation, but there can be no doubt in this case as to the purpose of the !kwè.

It is now very evident that these implements served the purpose of adding weight to the digging-sticks, and were used as well as heads to clubs.‡

* Mr. J. P. Johnston has also published these very interesting scenes.

† Kolben says in speaking of the Hottentots: "Every morning, excepting when the husband goes a-hunting or fishing, which happens not often, the Hottentot woman goes to gather certain roots and milk the cow for the sustenance of the family. These roots . . . she digs up with a stick of iron or olive-wood, pointed." There is here no mention of a perforated stone to add weight to the stick. But as the perforated stones are far from uncommon in the immediate neighbourhood of Cape Town, I found several in the precincts of the town, either Kolben quoted from memory, with the inevitable result, or these stones were possibly discarded at the time of his visit (1715).

‡ In New Guinea stones perforated seemingly in the same manner as our South African examples are mostly used for heading clubs; some are sharpened at each end. A few of these are natural stones; the greater part are, however, undoubtedly worked. See Haddon's "Classification of the Stone Clubs of British New Guinea," Journ. Anthr. Instit., xxx., 1900.

But they have been also used as hammers, and after all, what is a club but an appropriate hammer? Certainly the evolution of the one into the other would prove a simple affair. The large number of these bored stones found in halves, with a clean fracture, is a clear proof that they have not been used as war clubs only, but also that, perhaps, in more domestic pursuits they had been utilised as hammers. Moreover, I found on three occasions broken pieces of !kwès near smithies, and together with large pounders with abraded ends, pieces of iron ore, &c. (See Chapter XX.) There doubt is impossible; both the hafted !kwè and the hand-held stone were used together and for the same purpose. The two examples from the Anglo-Egyptian Sudan, figured by Mr. C. G. Seligman (*Journ. R. Anthr. Inst.* xl. 1910, pl. xxv.) are also broken in two. They show, nevertheless, the same mode of perforation.

Another supposition that these more or less hemispherical stones were used as querns, the stick being held in each hand and the stone made to rotate on its axis, would seem a very plausible one, but, there again, I cannot say that, in spite of my primary leaning to this conclusion, I can reconcile it with facts. I have probably seen and examined more than 800 of these perforated stones, but none has shown in the periphery traces of the wear that such a use would entail. Moreover, only the regularly spherical !kwès could have proved effectual for this purpose, and a look at Pls. XX. and XXI. shows that only a few of the implements effect a regular shape. But if the centre of the periphery bears no trace of the depression which grinding or milling would of necessity produce, some spherical !kwès are distinctly flattened at the holes; others, like Nos. 7 and 10 of Fig. 161 in Pl. XXI., or No. 3 of Fig. 156 in Pl. XX., have been used as braders or mullers or both, as either one or both sides, but not the poles, clearly show; and to that purpose many flat or depressed examples such as those in Fig. 152 (Pl. XX.) bear testimony.

It is difficult to conceive that apart from their use as club-heads, or make-weights for digging-sticks the perforation could have been of any other advantage to the owner or maker. Certainly a short handle inserted at one of the poles and kept in position by the conical hole would facilitate the handling of the !kwè as a milling stone, but this assumption is disproved by the total absence in querns or mortars of depressions corresponding to those which in the process of milling or grinding would be produced by these perforated stones, either spherical or flat. We have, it is true, make-weights in which the two poles show most unmistakably that they

have been used for grinding purposes, but the worn appearance of these extremities is comparatively recent, and in several instances the aperture is so large, and so rough, that the supposition that a wooden handle could have been inserted must be abandoned altogether.

In Pl. XX., Fig. 155, and also in Pl. XXI., Fig. 157, are illustrations of the !kwè, some moderately thick, like No. 1 (3 cm.), or very thick. Fig. 157 illustrates the initial stage of the perforating process. The reverse of Fig. 1 is almost like the obverse, showing that the maker began sometimes at each end, or, pole, or as in Cut 3 of Fig. 155, he had already bored to a certain depth before beginning work at the opposite pole.

No two !kwès are alike, but the difference in size and weight is so great, that, although some have undoubtedly been used for the purpose mentioned above—namely, club or make-weight—it is quite clear that the size and weight of others precludes the possibility of their having been utilised in that manner or manufactured for that purpose. Among the spheroids, Cut 4 of Fig. 154, is 116 mm. thick and weighs 7 lbs.* Cut 1 of the same Fig. is 96 mm.; Cut 2 of Fig. 155 is 53 mm.; Cuts 1 and 5 of Fig. 153 are respectively 30 and 24 mm.; Cut 1 of Fig. 155 is 30 mm.; Cuts 1 and 2 of Fig. 156 are 10 mm., and Cut 3, 20 mm. thick.

In comparison with these gigantic, large, or moderate size specimens, we have others which, like Cuts 2 to 8 of Fig. 161, are extremely small.† They may have been children's toys, perhaps they were worn as ornaments. The flat disks, Fig. 156, were, in all likelihood, pendants,‡ but No. 3 of the same Fig. served eventually

* It needed a powerful man or woman to handle such a club or such a make-weight, but in some of the Bush drawings, the stones are of very large size, especially those carried by women.

† It is said that these small examples were used for string tighteners in wet weather by slipping them as rings at each end of the bow. But none of our specimens fit the bows we possess.

‡ But whereas in all the !kwès figured, and also known to me, the aperture is small in proportion to the diameter, and never quite concentric, my colleague, Dr. Schönland, has figured three in which this aperture is considerably larger, being even wider than the sides of the periphery and concentric in the outer circumference. They are flat, coin-like, with the outer edge rather thin, recalling, as Dr. Schönland mentions, the brass neck-rings worn by women of quality in the Basuto nations.

These rings, I submit, have no connection whatever with the !kwès. They are, however, of great interest because they seem, like the brass neck-rings mentioned, to be similar to, if not identical with, that Asiatic arm made of steel, and in use even at the present time, I believe, in India, and denominated there "tchakra." The warrior holding his hand above his head makes this disc rotate with great

a more utilitarian purpose, as shown by one of its worn sides, which points clearly to it having been used as a muller, or may be, a whetstone for spears.

I received lately a pyriform specimen (Pl. XXIII., Fig. 169), which differs greatly in shape any !kwè either mentioned or figured; it is, like many other stone implements, made of dolerite, but is thickly covered with a deposit of lime. One end has been ground and the bore begun there; the other end, or opposite pole, is conical, and in order to start the orifice on the opposite side this end would of necessity have to be truncated, or reduced by grinding. The perforation has reached the centre; it is smooth, and therefore presupposes the use of stick and sand. Had it been completed the example would absolutely resemble the pyriform club-heads occurring along the Mediterranean littoral, and especially those from Sicily.

Symbolism is attributed by some antiquarians to these perforated stones, the latter being part of the *linga-yoni*, namely, the rosette. Inacceptable as this theory may appear to many, it is not a mere accident that led to the production of the singular implement figured in Pl. XXI. No. 6 of Fig. 162. Partisans of the symbolic doctrine may find there a reproduction, although not an orthodox one, of Sivaism. It should also be remembered in connection with it that the club figured in Pl. XIX. is shaped as a phallus. Nor are the numbers 1-5 of Fig. 162, in Pl. XXI., to be considered, although at first sight they may appear to be so, as rimmers or borers, because their composition is seldom sufficiently hard to prove effective, and, moreover, none fits the conical hole.* When these holes are smoothed, the smoothness has been produced by the use of stick, sand, and water, the first being made to rotate between the hands in the manner that fire was produced. There is no reason to suppose that the makers were acquainted with the bow-drill. But the

rapidity round the fore-finger, and projects it to a distance of some 60 yards, seldom missing his aim. Stone "tchakras" have been found in India and Cochin-China.

But whether or not these ring-discs (*Anneaux-disques*) are symbolic or not (Vichnou or Indra throwing the bolt under the form of a disc rotating round the index of the right hand), the exact counterparts of Dr. Schönland's specimens are found in France and Italy, and, as far as I know, have been discovered nowhere else. Their similarity can be only appreciated by a comparison with the Figs. given by Cartailhac ("L'anthropologie," 1904, p. 264). As armlets these ring-discs would prove undoubtedly very cumbersome, but the aperture of the South African ones, varying from $4\frac{1}{2}$ to 5 cm., is hardly wide enough for the insertion of a woman's hand, to say nothing of that of a man.

* An old Koranna, said to be a Bushwoman, asserts that implements like Cuts 4 and 7 of Fig. 162, were held in the hand to dig bulbs with.

stick could be used only after a start had been made by picking the hole with a sharp implement, of which Cut 7 of Fig. 162 is probably one. And although most of the holes are smooth, many bear very distinct marks of having been produced entirely by rimmers of that type ; some of which, in our possession, are very short.

The presence or the utility of these implements does not admit of ready explanation unless they are connected with symbolism. Could it be that the late aboriginals continued to produce unconsciously symbols of whose meaning they had become completely ignorant? It is true that the evidence of that worship is very meagre ; these phalli, if they are phalli, are rare ; perhaps to them may be added the ornamented stone, Fig. 173 of Pl. XXIII.

But, numerous as the !kwès are, no one has seen them made, neither the early or present Colonists, nor the few existing natives to whom their use is, or was, familiar.

The better-shaped spheroids are made of rounded river stones, or others. Along the littoral, round beach stones are selected ; and up-country naturally rounded stones are chosen in preference ; but even lava is made use of (No. 3 of Fig. 154) where other material is not easily procurable ; flat pieces of rock are also turned into account (Fig. 152, Pl. XX.), and the variety of rock is indeed great. Sandstone, quartzite, porphyry, dolerite, even steatite. There has occasionally, but rarely, been an attempt at smoothing the outer part of the stone, possibly by grinding. But, in the very great majority, the natural contour of the selected spheroid is not improved upon ; many examples are absolutely uneven.

Neither in the manufacture of his stone implements, be they weapon, tool, or !kwè, or even mortar or grinding-stone, has the maker possessed the technique of artificial polishing or grinding that obtained elsewhere during the Neolithic Period.

CHAPTER XIII.

BRAYERS, MULLERS, AND MORTARS.

I have already explained that the “!kwè,” or perforated stone, has, in many instances, been used as a grinding implement and possibly as a braying tool. I have also tried to explain that only the perfectly spherical ones could have proved useful if used as rolling grinders propelled by a stick inserted in the centre and held in both hands, adding, however, that, with the exception of a few doubtful cases, no evidence of the wear such a process would produce was discernible.

But supposing that even the flat ones were put to this grinding purpose, their very use, like that of the spheroids, would, of course, necessitate that of mortars, or querns, the hollowed part of which would have to correspond in depth and breadth with the impression left or produced by the convex part of the spheroidal, or the broad surface of the flat !kwè.

Common, indeed, are the mortars, especially in or near the middens, or “fontains.” Even on detached rocks they have been met with in Bushmanland, but I cannot say that I have as yet met with, seen, or heard of such depressions that would, undoubtedly, connect them with the constant use of the “!kwè.” In Pl. XXII. I figure three such mortars. This name, however, is a misnomer, because the depth of the longitudinal depression is really very shallow, nor is it much deeper in the centre than at each end. Nor has the depression which is always more or less navicular, or boat-shaped, been formed otherwise than by continued use. So little depth did the workers require, that when the depression was thought to be too great for their purpose, the mortar was often turned over, and the grinding, rubbing or pounding was begun anew on the opposite side.

The tools used for that grinding process are especially fitted for the purpose. As in the case of “!kwès,” water-worn quartzite pebbles of the style figured in Pl. XXIII., Figs. 168 and 170, are

chosen. They are more polished than the !kwè, but then this polish is produced or added to by the use of the hand. The plane or rubbing face is seldom at right angle with the axis (see Figs. 168 and 170), and this is due, in all likelihood, to the partly unsymmetrical groove of the mortar. These mullers are seldom worn smooth otherwise than at one end. No. 2 of Fig. 170 is, however, an exception, being pentagonal. Nor have they all a smooth face. Many have both ends abraded as if they had been held in the hand as hammers, and many mortars are broken in a way that suggests that they served as anvils; and, as in the case of the !kwè, no two mullers or pounders are alike. They vary also greatly in size, but we must be careful to discern between mullers showing distinct traces of the purpose to which they have been put, and stones, some of very large size, which bear no such marks. In Pl. XXII. are two such artefacts figured. They were both found buried at some depth. Fig. 166 was discovered while making a railway line near Cape Town; the other is from the southern part of the Kalahari. They are both unadorned; but Fig. 173 of Pl. XXIII. is ornamented. Its history is unknown. I found it in the Collection without any record, but I suspect that it comes from Mossel Bay. I know of others, but smaller.

These cylindrical artefacts—that they are artefacts does not admit of a doubt—are not absolutely symmetrical, and the purpose of Figs. 166 and 173 remained conjectural until we received the specimen represented by Fig. 167. It was presented to the Museum as being a Bushman's anvil, but from further inquiries it transpired that the stone was used as a beacon by the Hottentot, or perhaps the Bushman tribes, to denote the limits of their grazing or hunting grounds. If a dispute arose between two tribes or clans, the chief would direct a search to be made for the beacon, which, when dug up at the spot mentioned, would establish the claim of the tribe.

There is no corroborative evidence that the three implements figured were used as beacons. I have heard of another found at Klein Brak River (Mossel Bay); and in the Records of the Albany Museum a fifth has been figured which is 49 cm. in length. In the same Records Dr. Schönland has reproduced a diorite (?) muller 21 cm. in length and pointed at one end, which closely resembles some in our possession, and which might come also within the category of symbolic tools. We have, moreover, smaller cylindrical ones from Knysna, etc., one of which has the ends somewhat abraded.

The supposition that these cylindrical stones were used as anvils is, of course, untenable. Fig. 166 is as smooth as if it had been polished ; Fig. 167 shows no mark like that which a hammer would leave, and the proposition that the huge pieces served as braying tools would certainly not apply to Fig. 173, the ornamentation of which makes it too uneven for effectively fulfilling this purpose.

For the present it is safer to figure or mention these stone implements than to try to explain their purport.

CHAPTER XIV.

POTTERY.

Pottery making was unknown to the Magdalenian reindeer hunters, although it is claimed for those that occupied Belgium that they were acquainted with the manufacture. But pottery abounds during the Neolithic period of Europe.

The same abundance obtains in South Africa. As to its antiquity nothing can be adduced. Respecting its style and peculiarities a good deal can be said.

In the former case the only evidence of pottery having been found absolutely together with palæoliths of the boucher type is that of the Nooitgedacht deposit; but I have pointed out that the edges of the potsherds found there are not in the least abraded, whereas the bouchers or scraper-knives are so polished and worn as to have, in some cases, returned partially to the primitive boulder shape from which they were evolved. It is, therefore, impossible in this particular case to associate both implements and pottery.

With the knowledge obtained at present, it is safe to connect the pottery manufacturing process with the South African Neolithic culture, as is the case in Europe.

But we are faced here with forms peculiar to South Africa, as the Figs. of Pl. XXIV. plainly show.

The ovoid shape, conical at bottom, predominates. The maker—woman in all likelihood—is not very experienced, and this shape varies somewhat, but it remains mostly on the same lines. I know only of two pots which are nearly similar, and they were found together at Mossel Bay. One is represented in Pl. XXIV., Fig. 177.

Rare indeed are these wholly preserved pots; I know now of eleven only. The Museum possesses eight, seven of which are here represented. Another has been figured by Dr. Schönland—which, however, judging from the reproduction—shows no sign of ear or

* “Records of the Albany Museum,” i., Pl. I., 1903.

mamelon. This variation in form precludes the possibility of an industry for barter or exchange. Had it existed a similarity of shape obtained through imitation would have resulted.

This pottery industry is therefore local, and the material used is that found at hand. Along the sea-board, whence most pots come—fragmentary mostly, but also occasionally whole—the clay is seldom freed from impurities; it is even of the coarsest kind, mixed with a large quantity of quartz grains or small pebbles (Fig. 179). The clay so mixed is of the kind that accumulates in the marshy depressions of the localities in which these pots are found.*

More care in kneading seems, however, to have been taken for other specimens, such as Fig. 174, found not far from the very primitive pot, Fig. 179, and more discrimination in the quality of material is indicated by the composition of the clay of Figs. 175 and 176. Potsherds from up-country “stations” are often superior in texture and baking to those of the open-air middens of the Cape Flats, or of the Western Coast; but most fragments indicate that either the kneading of the clay or the baking is very primitive or imperfect, as shown by the blackened or reddened outer rind of the vessel, and the greyish hue of the centre, or of the inner part of the same.†

In this respect there is a great resemblance with the neolithic pottery of Europe.

Pottery there was not baked in ovens; the pots were made by hand, the wheel being then unknown.

Our South African specimens are not baked in ovens, and are also made by hand; but there the resemblance ceases. The shape of the South African vessels made by the occupiers of middens or rock-shelters is neither calciform or goblet-like, nor spherically ovoid, and when somewhat amphora-like, the bottom is neither as broadly rounded or as flat as in the European vessels; there is no handle proper; occasionally there are perforated ears for suspension as in some European relics, but these openings are of a different type.

A point, however, of the greatest importance in connection with this comparison of the South African earthenware vessels with the

* It has been suggested that in the Neolithic of Europe rock was ground to mix with clay (Assoc. Franc. Avanc. Sc., 1904).

† It has been claimed that Bush pottery was distinguishable through particles of straw being still left in the baked clay—the straw to make bricks. I have examined these “straws” microscopically. There is nothing worthy of acceptance in the assertion. The parts left are vegetable particles found in the clay, which is extremely badly baked.

European is that, in Europe, no remains have as yet been found that plainly indicate a truly *primitive* type of neolithic pottery. The examples found there are always connected with the bronze or polished stone period, a period connected with a greatly advanced culture.

This connection does not exist here, for the very good reason that there never was a bronze age, but doubtless the ceramic industry has lasted long into the iron period. The pottery found in the middens of the littoral, or even in up-country shelters, is of a style that, to me, seems to point to the survival of a most primitive kind, if it is not the precursor, of earthenware manufacture.

It is true that among a fairly large number of pots from the prehistoric tombs of Egypt, in the Museum Collection, are one or two, the elongate-ovoid shape of which somewhat resembles the South African, but although made by hand they are far more symmetrical and of much superior texture and workmanship. (Fig. 183 of Pl. XXIV. represents one of these Egyptian pots.)

The characteristic of the Strand Looper pottery is the presence on each side of the vessel of a mammiform projection, or of a perforated ear, which are seldom wanting in these ovoid-conical vessels. These prominences are not as clear in the illustrations as they are in reality. That the perforation of these ears was intended for suspension seems a natural enough conclusion; but what of those that have no perforated ears, but have instead a boss or mamelon? (See Figs. 174, 176, Pl. XXIV.)

These projections, perforated or not, are nearly always much thicker than any other part of the vase, and they are better preserved on that account. They are far from being uncommon, and it is therefore easy to verify the explanation which I give here. The presence of these lateral protuberances may be explained if we assume, as I believe to be the case, that the ear is the first lump of clay held either in the hollow of the hand (mamelon) or between the thumb and forefinger (ear). That the modelling begins in this manner seems proved by the thickness of that part which projects inside the pot (Figs. 181, 182) as much as, or even more than, on the outside. In order to add to the cohesion, this part must of necessity be thicker than the other added parts that will form the vessel eventually.

Moreover, whenever there is a perforation of the mamelon, which thus becomes an ear, the hole is not straight; it curves inwards; and the bend corresponds with the position the two fingers of one hand would assume, if the first lump of clay was held in the manner

alleged. In several instances the hole is not quite complete, as if the two fingers had not completely met.

Primitive as these pots clearly are, the walls are usually of uniform thickness, especially the sides, but the bottom is thicker than the walls. The constricted neck is, as a rule, unsymmetrical, as if that part were difficult to achieve, or required a dexterity of hand wanting in the potter.

As far as known to me, the majority of these whole relics are found in the sand-dunes that have eventually covered the open-air kitchen-

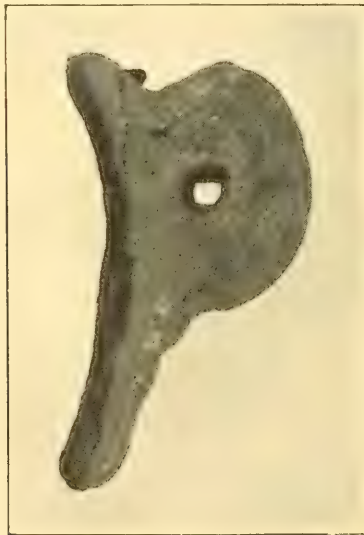


FIG. 16. $\frac{3}{4}$.

middens of the coast; but two, Figs. 175 and 176, were discovered in mountain rock-shelters improperly called caves. Fig. 175 (Pl. XXIV.) is from the Ceres District; Fig. 178 from Ladysmith, and Fig. 176 from the Zuurberg; all three localities in the Cape Colony. Fig. 176 is partially filled with specular iron, and the specimen found in the sands of Port Nolloth (Cape Colony), Fig. 180, was also found to be half-full of the same material.

But although, in the great majority of cases, these ovoid-conical pots are as described or figured, at the nearly extreme western end of the littoral whence they are recorded, there is a difference.

In the sand-dunes of Walfish Bay, where a few aborigines said, or believed, to be the survivors of the Strand Loopers, now

called Topnaar Hottentots, are still to be found, there has been lately discovered undecorated pottery, of a kind as coarse as that which prevails in the Middens of the Cape Peninsula.

These fragments plainly denote vessels of the ovoid-conical shape provided with ears. But instead of that part of the pot which forms the ear projecting inwardly, as in Figs. 181, 182 of Pl. XXIV., and on that account supporting the theory of the lump of clay being held by the two fingers of one hand, the clay of the ear is clapped on the already finished pot as shown in the text-fig. 16,

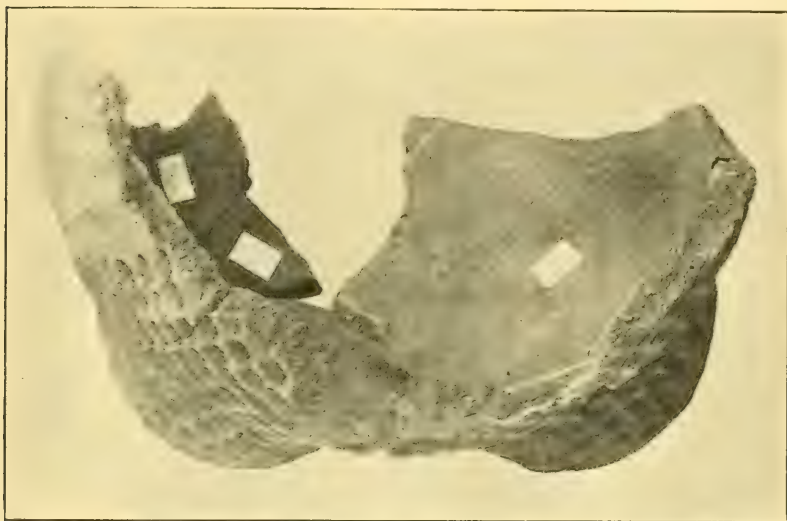


FIG 17. $\times \frac{1}{2}$.

POT SUPPORTED BY THE EARS. THE GROOVE OF THE MISSING EAR IS SEEN IN THE CENTRE.

and the hole, which is of small diameter, is straight, and has been plainly punched through. In other examples, in which the inner bulging is also absent, the opening of the ear might still support the theory of the two fingers process, but the perforation, instead of being transverse, is vertical, and also too small to be due to finger action.

It may be said of these relics that they show either traces of regression, or of a more advanced culture retaining still traces of survival.

If we now turn to the furthest eastern end of the sea-board where pottery has been found, we have evidence of another kind.

In the sand, at the foot of the Berea Hill, in Durban, was discovered the vessel represented in text-figs. 17 and 18.

It is no longer conical, the walls are very thick, the broad, slightly convex *bottom* is supported by three transverse elongated ears; one is wanting, but the groove of the perforation is left. These ears are perforated lengthways, the perforation being narrow, straight, and even, and clearly produced by the clay being built over a reed or twig, fitting against the already finished vessel. There is no bulging in the inner part of the pot.

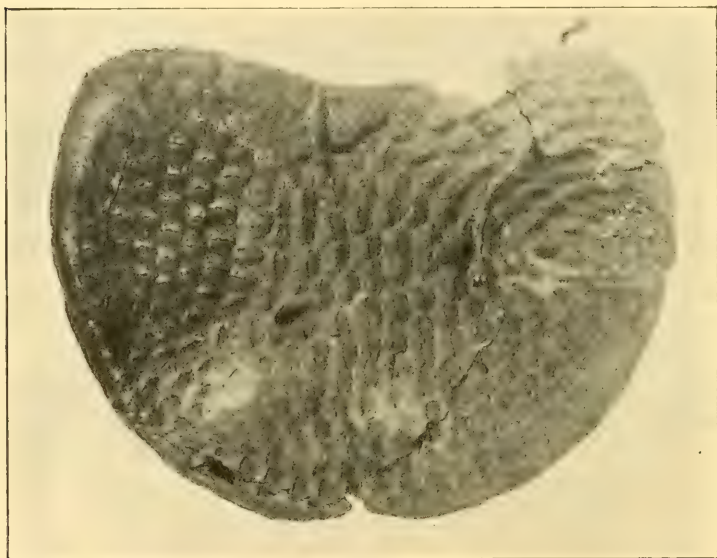


FIG. 18. $\times \frac{1}{2}$.

THE TWO BLACK SPOTS REPRESENT THE PERFORATION OF THE EAR.

The theory of the first lump of material being held between the thumb and forefinger of one hand cannot, however, apply in this case.

This earthenware pot is thus of a style hitherto unknown, and differs greatly from that which, we know, obtained among the Strand Loopers of the Littoral. There are no means of ascertaining whether it tapered into a neck. From the configuration of what is left, and on the assumption that the upper decorated zone was of a width equal to the lower, it is

most probable that the mouth was as broad as the periphery, and that it was not constricted to a neck as in the examples figured in Pl. XXIV.*

That the very short, bluntly tripod-like supports formed by the ears gave the vessel more stability is probably the explanation for their presence at the bottom instead of on the upper part of the sides, but it is quite a departure in the technique. The clay is very badly baked, only a thin external and internal layer being burnt red.

Certain earthenware vessels made here by Bantu-speaking races are not unlike the Berea example, but apart from the perforated knobs, which plainly denote a Strand Looper technique, the decoration is also clear proof of its Bush origin.

It is not always easy, however, to decide whether pots of the shape of the former, but undecorated and earless, or without traces of mamelon, are of Hottentot or Kafir manufacture. One, now in our Collection, is alleged to have been found near a midden at Kei Road, Cape Colony, and another of nearly the same shape near the mouth of the River Kei, it is said, together with stone implements. Both, but the latter especially, are extremely uncouth.

Yet the evidence afforded by the two examples represented in text-fig. 19, and especially by the smaller of the two, seems to show that flat-bottomed, sub-cylindrical earthenware vessels were also manufactured by people of the yellow race, though perhaps for certain purposes only.†

Fig. 1 has no history. It is alleged to have been found in the western part of the Cape Colony, but there is no absolute proof of the same.

Fig. 2 is less primitive in shape, and the rim projects nearly a centimetre all round. It is from a rock-shelter in the Prince Albert district of Cape Colony, and with it were found other fragments of pottery, including a *typical* "ear."

This shows conclusively that the earthenware-making Bushmen did not restrict his skill to the production of eared, ovoid-conical pots. But this Rietfontein rock-shelter showed unmistakable traces

* Dr. Schönland has figured a small pot, $3\frac{1}{2}$ inches wide at the mouth and of about the same height, adorned with three knobs above the middle of the girdle. "which represent a reminiscence of ears." This pot was discovered a mile and a half from the sea, near Port Alfred, Cape Colony.

† These small pots are said by the old Colonists, who came into touch with the remaining wild Bush people, to be the vessels in which the poison for arrows was prepared.

of having been occupied till very recent times; and the shape of Cut 1 of Fig. 19 may also be due to outer influence.



(2)

FIG. 19. $\times \frac{1}{2}$.

(1)

Leaving for a moment the indications afforded by the shape of the pottery, let us now examine those afforded by the decoration, when there is ornamentation.

Of late years a good deal of attention has been devoted, especially by German antiquarians, to establishing an order of succession in the different types of the neolithic pottery of Europe, especially through the ornamentation.

The first division is the "Schnurkeramik," characterised by the impressions left on the clay by means of strings pressed horizontally against the sides of the pot or vase.

The second division is the "Bandkeramik," in which the decoration is produced by incisions in the clay, these incisions resulting in chevron, spiral, band, rectilinear motive, curved line, &c. The whole vase is often decorated, but oftener the zones of decoration are separated.

Unfortunately, there is very little to show which of the two systems of decoration is the older. Whereas antiquarians of good repute maintain that the Schnurkeramik preceded the Bandkeramik, other antiquarians as well authorised as the former, hold the opposite view. Moreover, the matter is complicated by numerous finds pointing clearly to an hybridisation or commingling of the two forms. It is not therefore proved that the Bandkeramik type is the

older of the two, but the decoration of the South African Neolithic pottery may be said to belong to it. It is, however, an ornamentation of the rudest description, as appears from the illustrations.

Pots or vases preserved entire are seldom decorated; ornamented potsherds are much more common. Fig. 190 of Pl. XXV. represents a style of decoration consisting of incisions in clay, made in all likelihood by tools, such as Cuts 6 and 7 of Fig. 185. These fragments are from a rock-shelter in the Orange River Colony. In Cut 1 of Fig. 197 (Pl. XXVI.), a fragment of the Berea pot, the decoration is very deep and very coarse; in Cut No. 3 of the same Fig. the punched dots are more regularly disposed, some of the series being deeper than others, but although it may appear from the slightly faulty figure as if some of the less pronounced rows were produced by the impression of a string such is really not the case. The specimen is from a rock-shelter at Burghersdorp, Cape Colony.

Seriated incisions may be thus said to be one of the characteristics of the decoration. The pot, or vessel, represented in Pl. XXIV., Fig. 176, is very instructive in that respect, but at the same time it shows a very great, and certainly artistic, advance in decorative art. Round the neck runs a single horizontal series of vertical, parallel, shallow hatchings; on the sides is another series of slanting Cuts joining slightly above the middle with a double vertical one in which the hatchings are parallel, the decoration thus formed representing somewhat the capital letter Y.

This example is the best decorated earthenware vessel hitherto discovered. In shape it is also unique. The ears are indicated, but not perforated. The baking is thorough. The specular iron it contains weighs 6 lbs.

But although the specimen referred to is the only one known that may lay claim to be artistically decorated, round the neck of some, such as the one represented in Plate XXIV., Fig. 177, there are horizontal lines which at first sight might be taken to have been caused by the impression of string, but these lines instead of being spiral are disjointed, and at the base of the neck is a circle of seriate hatchings deeper than the impressed line and slightly slanting. I know also of potsherds, plainly fragments of the neck, bearing similar imprints. The impressed lines and circles of that constricted part of the vessel suggest plainly the use of the burin.

In the open-air middens of the sea-board ranging from Port Nolloth to Mossel Bay, the earthenware vessels and the shards

do not appear to have been decorated; nor do I know of any ornamental pottery treated with a decorative pattern from the Outeniqua and Tzitzikamma Districts, except the pots from Mossel Bay; but shards from Kowie and from the Natal coast, Cut 2, Fig. 129, are known to have been so ornamented.

In a Cape Flats midden there have, however, been found, but in one locality only, fragments with a series of perforation represented in Fig. 192 of Pl. XXVI.*

In the inland districts we meet with decorated fragments, and the pattern varies between that of Cuts 1 and 3 of Fig. 192. We have examples from the Stormberg, Cape Colony, where the incisions form zones separated with a broad undecorated space. Examples with such a decorative motive do away with the theory, which has been advanced, that the "up-country" Bushman in the process of manufacture held the clay together by means of rush-baskets; the rushes would perish in the baking process, and the impression would remain. This process could not account for the broad undecorated zone occurring between two decorated ones, and, in addition, the knots of the meshes should have had to be extremely thick to leave the very deep impressions such as those we meet.

The decoration, when it exists, is not due to a mechanical process; it is a deliberate, intentional act.

I am not at all sure of the use these more or less ovoid-conical pots were put to. It might be urged *a priori* that they were cooking vessels.†

In all our examples the greater part of the surface from the ears downwards is doubtless blackened, and the upper, including the neck, is redder. The lower part of the specimen represented in Pl. XXIV., Fig. 178, is also black, but this colour is due to a kind of glaze, possibly caused by a mixture with the clay, or by an outer coating of the milky juice of an *Euphorbia*.‡

Then, suspension over a fire by means of the two ears would

* We have three such pieces which seem to have been part of one single receptacle.

† Kolben is not explicit on this point. Speaking of the potter's art among the Hottentots, he says of them: "They place this clay on a flat stone, and then, without any other tool than the fingers, they, pastry-cook-like, give to the vases nearly the same shape that the Romans gave to their urns," *i.e.*, (?) amphoræ.

Ibid.: "In order to bake the vessel, the pot, when sufficiently dried in the sun, was deposited in a hole and fire made all round it."

‡ This method, I am informed, prevails still among the Hottentot aboriginals of Port Nolloth. Kolben avers that the clay is taken from the white ant (Termite) nests, and that the larvæ mixed with the same give in the burning process more cohesion to the clay. This is of course absurd.

certainly not be easy or reliable, for the hide thong, or rope, would be soon charred. That these vessels were used as suspended cooking utensils remains therefore very doubtful.

Fig. 174 is the largest "Strand Looper" vase hitherto found. That it was not a cooking-pot, at least previous to its abandonment, would seem to be proved by the fact that a small hole on the lower part of the side was closed by a conical limpet, similar to, but somewhat larger than, that closing the aperture of the ostrich-egg, Fig. 189, Pl. XXV., presumably intended for storing water. The black cement used for the purpose is of the same substance in both cases.

On the whole, these pots are far from strong, but however coarse the texture, they can all hold water. A find made at Hangklip, in False Bay (Cape Colony), where six pots, with and without ears, were discovered buried in the sand,* and standing in a line, seems to bear out the conclusion that they were mostly used for storing water, fat, or butter. Our two examples from Mossel Bay bore a gummed label affixed probably some forty years before I examined them, but which had become so impregnated with a fatty substance as to have become illegible.† Even now these pots are slightly greasy on the surface.

It must not be forgotten also that two of these vases or pots were found partly filled with specular iron.

Against the conclusion that these pots were mainly used as receptacles and not for cooking purposes, I must, however, add that I know of two ostrich-eggs, similar to those used now in the Kalahari Desert as water-vessels, that have been found close to middens, where potsherds are numerous, and even not far from where the specimen, Fig. 174, was discovered. With one of them was found an admirably preserved quiver containing arrows with the modern triangular iron tips. These relics are thus in all likelihood comparatively recent.‡

Is the manufacture of these ovoid-conical earthenware vessels to be attributed to Strand Loopers only, or to Hottentots as well?

Kolben does not discriminate between the two. He never went far from Cape Town; and the Hottentots he met were in all likelihood Strand Loopers, who, however mixed they might have become

* These pots were unfortunately broken in the removal.

† These two pots were sent to the Museum at the same time (1856) as a Portuguese inscription dated 1500, and they were on that account labelled as being of "Portuguese manufacture."

‡ They were found some 12 miles from Cape Town, and probably date from the beginning of the colonisation of the Cape.

by this time, would have retained their habits unmodified by their short intercourse with the black slaves from Mozambique or Madagascar, the Malays, or the Europeans who formed then the comparatively new settlement.

It will readily be admitted that conical vases, that could not stand by themselves, would prove singularly inefficient for many purposes, especially for milking cows or ewes, and we know that milk was one



FIG. 20. $\times \frac{3}{4}$.

of the main staples of the food of the Hottentots.* For that purpose they possibly made use of another kind of vessel, like that found in Cape Town and figured here.†

* The evidence obtained from the first records of colonisation unmistakably point to the fact that the Strand Loopers had no cattle or sheep.

† This remarkable specimen was lately discovered at a great depth in the main street of Cape Town, close to the place where the stream of fresh water from which vessels in the early days replenished their stores, and not far from the sand-dunes which at that time extended to that point. In style it approximates some of the Batlapin's (Bechuanas) pottery, yet it is quite distinct. It is very coarsely made and indifferently baked.

No artificial stand has as yet been discovered that could have been used for these ovoid-conical pots, but, after all, they are singularly well fitted by their shape for propping in the sand of the dunes, or even in the ground. One thing is established, and it is that this shape prevails all along the littoral, and, in nearly all cases is it found, connected with the culture of the Hottentot race which we call "Strand Looper."

Except for Kolben, no light is thrown by the early travellers on the pottery-making process of the Hottentots or Bushmen.

Sparman, a careful observer, speaking of the Hottentot-Kaffirs, or Gonaquas, which he met on or near the Sunday River (Cape Colony), says that they *also* keep their milk in bags, but that the basins they use for milking are made of roots so closely woven that they hold milk or water.

The inference therefore is that pure-bred Hottentots used other receptacles, probably earthenware vessels.

Burchell, who encountered what he calls the Bushmen, states: "They (the Bushmen) received a share of the fat with equal delight, and immediately began to melt it in a little *pot* of their own manufacture, and one which was apparently intended only for that use. It was indeed the rudest piece of workmanship imaginable, being simply a rough bit of stone, in which they had contrived to hollow out a small cavity; it, however, perfectly answered the purpose for which it was used.

"The figure of this pot may be seen at the end of the chapter, where, opposite to it, on the right, is the representation of another, made of burnt clay, the workmanship of which, if not Bachapin (Bechuana), does them more credit, being moulded to that form by the hand only." *

In conclusion, we find that we have in South Africa three styles of pottery ascribable to the Aborigines of Hottentot race.

The type represented in Cut No. 1 of text-fig. 19, very much resembles that of the earthenware vessels made formerly by the Fingoes, Xosas, Basutos, and, even now, fashioned occasionally by them.

The Cape Town rotund type, text-fig. 20, closely approximates the pots of the Bechuanas.

The Ovoid-conical type figured in Pl. XIX. resembles no other.

Pottery, however, quite as much as, if not perhaps more than, stone implements retains long its characteristics. So powerfully

* The figure given by Burchell corresponds nearly absolutely to the pot from Kei Road, mentioned on p. 127.

constant is the survival of form that a change in style implies a long succession of years.

Many of the neolithic pitchers or cooking-vessels of Europe can match in shape those of modern production. It is generally admitted that in Europe this ceramic art was introduced from the East, and superseded a more primitive, native one.

In South Africa it would seem as if the opposite obtained. If the cylindrical, convex- or flat-bottomed pots mentioned or figured are ascribable to pure Bush or Hottentot races, then they show regression because of the much simpler technique when compared with that of the ovoid-conical eared pots which we can safely connect with the Strand Loopers. The homogeneity of the race or branch of the " Khoi-Khoi " (Hottentots) is pretty conclusively established. The primitiveness of their culture, as shown by their relics, is indeed great, but not so their pottery, which has not only a facies of its own, but the execution of which has demanded great skill.

We shall probably never know which of the two, if not three, branches of the race preceded the other, and occupied the land, but that the Strand Looper was not always relegated to a narrow border on the sea-coast is proved by the finds made, deep inland, of his ovoid-conical eared pottery.

CHAPTER XV.

THE SHELL-MOUNDS OR MIDDENS OF THE LITTORAL.

In South Africa, kitchen middens, which are often of a considerable extent, are to be found all along the coast from Walfish Bay on the west, to past Natal, and probably as far as Delagoa Bay on the east.

Shell-mounds would appear to be a good designation for some, if not most of them, and undoubtedly shell-fish was the main if not the sole staple food of the occupiers.

These middens are also found at no very great distance from the seashore, especially where fresh water in the shape of a "vlei" or lagoon is obtainable for a part of, if not during the whole year. Such places are very numerous.

It is quite possible that wandering tribes, clans, or families of aborigines did descend periodically to the coast to collect or fare on shell-fish, in the manner of the Kafirs of the present day on the coasts of Natal and Pondoland.

The presence of shells of the bivalve, fresh-water mollusc *Unio* in some of the up-country rock-shelters very remote from the coast, seems to indicate that the aborigines were partial to molluscs as an article of food.*

In these shell-mounds we meet with the remnants of a very primitive culture in the shape of ornaments, utensils for domestic use, and also pottery.

When the middens are in the open, these relics are not always as well preserved as when occurring in the cave-shelters, which the occupiers turned into shell-mounds.†

The makers of these mounds, whether in the open, under rock-shelters, or in caves, were in all likelihood coast-dwellers, but it is

* Remains of sea-shells (*Patella* and *Haliotis*) were discovered in a rock-shelter in the Beaufort West District of the Cape Colony, far removed from the sea.

† In the Tzitzikama District of the Cape Colony, the farmers are in the habit of carting away this shell-guano, so called, as manure for their lands.

not improbable also that they were forced towards the coast by other invaders. Some of their household goods, or utensils, are of a type found still in the interior; !kwès, mullers, conical pots, small parers, scrapers of different sizes and shapes, but as yet, no palæolithic boucher has been unquestionably found with them.

There is, however, some difference between the domestic utensils of the Outeniqua-Tzitzikama rock-shelters or caves, and those occurring elsewhere, a difference which points to a type of culture, to which I would not hesitate to give a name, as has been done for the Magdalenian, only that in Europe this name is connected with the period of the Reindeer, and that we cannot connect here these shell-mound makers with a period during which certain animals prevailed.

THE OPEN KITCHEN MIDDENS.

A midden of this kind is usually found quite close to the sea, but never far from fresh water. It is mostly buried under sand-dunes that shift to and fro according to the direction of winds prevailing at the time, but which, owing to their dryness, act often as a preserving medium. When begun on more solid ground, these middens, which are now concealed by more or less dense vegetation, are revealed occasionally through road-cuttings or removal of soil.

One such midden at Blaauwberg, near Cape Town, is situated close to the sea, but at no great distance from Riet Vlei, a fresh-water lagoon that only at times finds an outlet to the sea. The rolling sand-dunes, when removed by wind agency, leave occasionally exposed, even at some distance from what is found to be a thick stratum of shells, pottery, fragmentary or whole, such as Figs. 174 and 179 (Pl. XXIV.). Perforated stones, irregular, rarely spherical, are not uncommon. Occasionally querns or mortars are discovered there. At the time of our visit in search of a human skeleton, the skull of which had been laid bare, only one ridge of the accumulated shells, consisting mostly of *Mytilus* and *Patella*, mussels and limpets, was showing. Under this ridge of shells, some 18 to 20 inches in thickness, we obtained the skeleton of a female coated with a very thick deposit of carbonate of lime brought probably by the infiltration of water through these sea-born sands. The cavities of the skull were completely filled with this calcareous deposit, and the skeleton was undergoing fossilisation if it had not already reached it. On removing the calcareous sandy coating there were found round the pelvis two rows of flat, minute, ostrich egg-shell heads of the shape and size of those figured in Pl. XIX., Fig. 146.

The body was lying on its right side, but not quite horizontally, this being probably due to the removal of one side of the original layer, the place where it was exposed being a sloping bank; the legs were bent and drawn towards the chin; the position of one arm was doubtful, but the encrusted right hand lay on the back part of the pelvis.

We found several scrapers of the usual Cape Flats type; two pygmies, one made of transparent quartz; the left ramus of a small antelope (the Steinbok), but, as I have already stated, only a small portion of the midden was visible, the rest was either covered or had been obliterated by the shifting sand-waves.

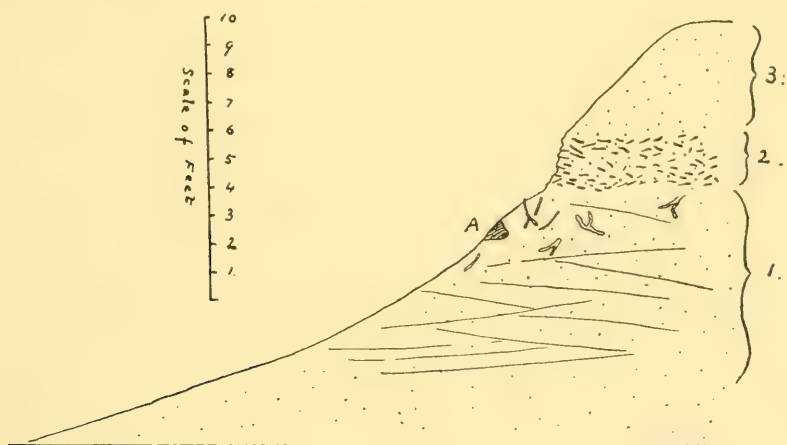


FIG. 21.

1. LOOSE SANDY LIMESTONE. 2. LAYER OF BROKEN SHELLS. 3. LOOSE SAND WITH MANY BRANCHING TUBULAR BODIES OF HARDER ROCK.
4. POSITION OF HUMAN BONES.

Mr. A. W. Rogers, Director of the Cape Geological Survey, who kindly accompanied me to investigate the deposit and disinter the skeleton, could not express an opinion as to the actual age of the former, no shells or bones of extinct animals being found in it.

The crest of that midden is very much higher than the present level of the sea. It was not dominated at the time of our visit by the crescentic sand-dunes, but the insidious creeping sand-waves were gathering round. One month afterwards all signs of its existence were absolutely obliterated.

Separated from the seashore, where *Mytilus Turbo* and *Patella* shells abound, by a long stretch of undulating sand-hills, continually

exposed at all seasons to the blast of that ever-moving sand, it does not seem probable that the shell-gatherers chose the top of this sand-dune to settle there even temporarily. It is true, however, that under the layer of shells, and under the body, there was sand, but we found also there tubular lime-coated roots, or trunks of trees or bushes, of a size plainly indicating that vegetation of a robust kind had in previous years consolidated the original sand-heap.*

I have come to the conclusion that this sepulture is very old, because the immense accumulation of sand postulates a great age. The extent of the midden must also have been considerable; for we found about a mile from the place large potsherds exposed by the wind.

MIDDENS OF THE CAPE FLATS.

On the Cape Flats, beginning at about 5 miles from Cape Town and reaching almost to False Bay, near Strandfontein, is a succession of longitudinal depressions in which the rain-water accumulates, and which are usually dominated on one side by sand-hills often of considerable magnitude, and as shifty as those occurring in a line more or less parallel to the seashore. When one, or more, of these dunes is removed bodily, although gradually—a thing which happens at times—one finds here and there on the floor heaps of accumulated sea-shells, mostly reduced to minute fragments, and with them a profusion of small pieces of ostrich egg-shell, as well as perforated discs of the same material manufactured into beads. These beads are irregularly rounded outwardly, and most of them are of much smaller size than those met with farther north. The very much reduced periphery, in proportion to the size of the perforation, required consummate skill in the making; the number of broken, and therefore spoiled, discs bears out the supposition as to the difficulty inherent to the making. Fig. 146 represents these egg-shell beads in all stages of manufacture. At the top of the Fig. are shown the borers, also found *in situ*, and on the right three glass beads of European manufacture.

Some of the implements represented in Fig. 144 were found there,

* "The sand is calcareous. As it shifts before the wind it in many places buries bushes growing near the shore. These die, and their stems buried in the sand, decay, and in doing so set free a certain amount of acid which brings about a solution and redeposition of calcareous matter in the sand. The sand immediately surrounding the stems is thus cemented into a solid mass which encrusts the remains of the bark. The wood decays away, and a pipe with a wall of cemented calcareous sand is the result" (Moseley, "A Naturalist on the Challenger; Cape of Good Hope," p. 149).

as well as the scrapers of Fig. 141, and most of the crescent pygmies in Fig. 143.

With the stone implements and the fragments, more or less worked, of ostrich shells there were discovered a few brass buttons; clay pipes, evidently of early Dutch manufacture, with the stem broken off close to the bowl; several lead musket-bullets, together with undecorated potsherds of native manufacture; also querns, and smithies with iron ore and stone hammers *—! kwès split into two, &c., showing that the dwellers, or the later dwellers, were acquainted with the use of iron, but had still retained the stone for certain purposes. These sand-dunes of the Cape Flats have not yielded many bone implements, or the grooved polishing stones intended for sharpening them into awls or arrow-tips.†

In the neighbourhood of these sand-hills we found remains of the *Rhinoceros keitloa* and of the Elephant. The pottery is of the usual simple type, but at Strandfontein there were found sherds with a regular series of perforations of a unique kind (Pl. XXVI., Fig. 2).

THE BLOEMBOSCH DEPOSIT.

Strictly speaking, this deposit should not come under the denomination of kitchen-midden, because we did not discover there any layer of accumulated shells. Except for that, however, the conditions appear to be the same as in the middens of the Cape Flats, only that we met for the first time palæontological evidence of the utmost importance, intimately connected with that deposit.

Bloembosch is about 25 miles from Darling, Cape Colony, and 3 or 4 miles from the seashore, from which it is separated by intervening sand-hills. At one point is a "fontein," which does not seem to be intermittent, but alongside of it, and threatening to cover it ultimately, at the time of our visit, was a huge sand-hill, disconnected for a long distance from the coastal ones.

It is here that the remains of an extinct buffalo (*Bubalus baini*), and horse (*Equus capensis*), as well as of other large mammals still living were discovered. As has been seen in Chapter VII., dealing with the palæontological aspect of the Antiquarian question, it soon became evident that the animals had been brought piecemeal to the fountain by their slayers, because parts only, not whole skeletons, were found *in situ*.

See Chapter XX.

† No. 3 of Fig. 172, which is one of the very few bone implements found there, represents a knife or spear-head made of the rib of a mammal, and greatly resembling in shape the bone knives or spear-heads of the lacustrine deposits of Switzerland.

On the floor of that partly removed sand-dune Mr. J. M. Bain and I discovered small cores, scrapers, and borers similar to those of Pl. XVIII., Figs. 139, 140, 141, 144 (some of the pieces are there included); also a few of the crescent-shaped pygmies (Fig. 143); perforated ostrich egg-shell beads, but of a somewhat larger size than those of Fig. 144, and not so carefully concentrically rimmed; rough scrapers of the type of Figs. 118 and 120 (Pl. XV.), also made from the Cape Flats surface quartzite; larger scrapers, but also of the Cape Flats type; a small mortar; nuclei of different kinds of rock; broken !kwès; a small grooved stone for sharpening awls, &c. Here also we found two brass buttons of the same pattern as those occasionally found in the Cape Flats middens, as well as a few pieces of Oriental china, derived probably from the wrecks of some Dutch East Indian merchantmen sunk in Saldanha Bay, a place but little distant from Bloembosch.

When fresh water is as rare as it is in these parts, it is not at all surprising that successive generations of aborigines should have resorted to a locality where this necessity of life is found all the year round.

But diligent search, three times repeated, failed to reveal any other kind of implement that could lay claim to great antiquity—no boucher or vestige of it was met with, no long knife-scraper showing sign of old age.

Six months after the last search, that sand-hill had crept again to the floor on which the find of implements and bones was made. It is now fixed in position by a plantation of “marem” grass (*Psamma arenaria*), to the great delight of the owner and the chagrin of the Antiquarian.

From the account of this deposit, it will be seen that the domestic utensils or tools are the same as those occurring in the Cape Flats; the pygmies are alike, and so are the larger implements. The culture is therefore the same, and the race in all likelihood identical.

CAPE TOWN MIDDENS.

In Cape Town itself are the remains of what must have been an extremely large midden, extending from the very seashore close to Grainger's Bay, covering part of what is now the golf links, and abutting on what was once the Green Point “vlei,” a board and somewhat deep depression in which, in former times, the accumulation of rain-water lasted during the greater part of the year. The whole of this midden has now been removed or levelled—my house is built on part of it—but there are still to be found, and actually on

the very edge of the high-water mark, enormously large examples of marine shells, of limpets mostly *Patella*, but also of *Turbo*, many of them of a size and thickness that are certainly not now met with in the neighbourhood.

Close to the Mouille Point Lighthouse (now disused) the removal of sand for building purposes left exposed lately a heap of calcined stones, the examination of which showed plainly that a kitchen had formerly been erected there under shelter of the higher sand-hills that protected it from the prevailing boisterous south-east winds which rage so violently in these parts for half the year. The implements found near these calcined stones tell plainly of the occupations of the dwellers or makers. They are querns or mortars, mullers or pounders, a few scraper-knives of a very rude manufacture, together with a thick accumulation of all kinds of local sea-shells, and also a sprinkling of undecorated potsherds.

At a distance from this very spot were found close to each other six mortars,* one with an artificial depression on each side, and with the accompaniment of pounding utensils. Some of these mortars are so heavy as to preclude the possibility of their removal by nomadic people having no means of transport. They were thus permanent fixtures which the natives used while camped on the spot, or when they returned to it. (I know of a group of some sixteen such mortars near the edge of a small lagoon in the Cape Peninsula.)

There is no evidence that this midden is very old, yet, singularly enough, it lies on a raised beach, which, however, unlike that of the Klein Brak River, has yielded me, so far, no traces of artefacts.

The type of these mullers or mortars, !kwès and scrapers in nowise differs from those found in similar situations, but the absence of bone tools, and the relative paucity of scraper-knives might be taken to imply that the dwellers had the use of iron. I have, in truth, met with no smithies there, but it must be remembered that vestiges only are left of this once extensive midden, and also that the smithies of the Cape Flats are near by.

This shell mound is not the only one met with in the vicinity of Cape Town. The road that skirts Table Mountain towards Hout Bay has been cut through three such shell-mounds now covered with vegetation, while at Hout Bay itself there is an extensive deposit at a small distance from the mouth of the small river.

The same culture as evidenced by the remains of this Cape Town midden prevails along the western coast of South Africa from Cape

* For the shape of these mortars or querns see Pl. XXII.

Town to the mouth of the Orange River, as known to me, and eastward from Cape Point to the Kei and Tugela Rivers.

The shores of Saldanha Bay are huge shell-mounds. An earthenware pot still more conical than Fig. 180 (Pl. XXIV.), which comes from the sands of Port Nolloth, has been found at Langebaan.

Through the kindness of Mr. John Wood I am able to give an illustration of such a shell mound, exposed by a railway cutting in

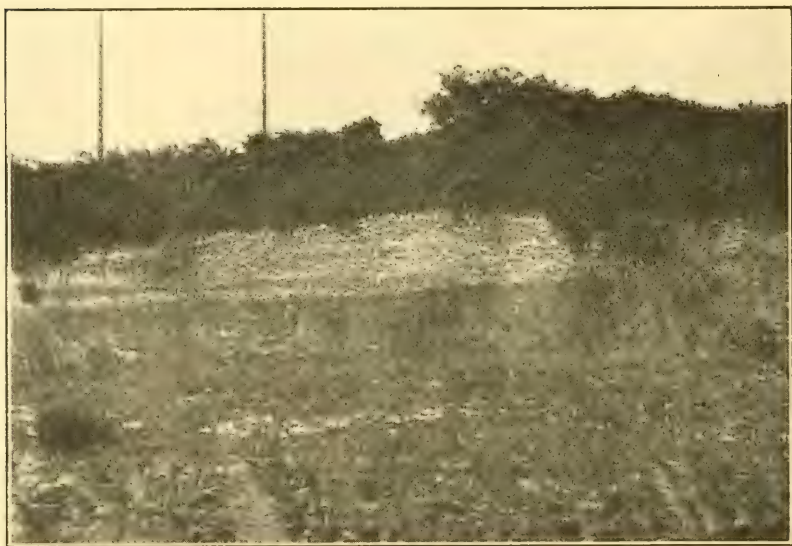


FIG. 22.

the vicinity of East London, Cape Colony. Its extreme length is close upon 90 yards, and it would have been originally 40 yards or more across. The maximum thickness is nearly 4 feet.

From the examples here given, but taken at random, of these open-air shell mounds, it is manifest that the culture they display is generally uniform. The implements are of a Neolithic type; not the Neolithic of Europe, America, or India, but a South African type corresponding in part to the former.

CHAPTER XVI.

CAVES AND ROCK-SHELTERS.

THE HAWSTON CAVE.

It is not known if to the north of Cape Town the caves or rock-shelters along the coast were once occupied by aborigines in the manner of those of Outeniqua or Tzitzikama.

But rock-shelters or caves are found along the southern coast between Cape Town and Mossel Bay, Cape Colony. At the extremity of the Cape Peninsula, towards Cape Point, we know of cave-shelters, but so ransacked are they now that no information as to the mode of life of their former inmates is any longer obtainable. The Museum possesses numerous examples of the original Cape Point finds, including two human skulls. They consist of the usual middens types: mullers or braders, pounders, querns or mortars, !kwès and potsherds. Bone tools or ostrich egg-shell beads may, however, have been disregarded, and the accumulation of sea-shells not recorded. Close to the spot a conical earthenware pot was lately discovered.

At a short distance from the hamlet of Hawston, on the coast of the Caledon Division, fortuitous circumstances revealed there lately evidence of occupation by man and beast of rock-shelters differing somewhat from those recorded hitherto.

While removing slabs for building purposes from the roof of a moderate-sized cave having a broad opening, and well known to the inhabitants of the neighbourhood, mostly fisher-folk, there were exposed to view several long, tunnel-like fissures, which, on examination, were found to be almost completely filled with bones of animals.

These fissures, numbering six or seven, radiated from that part of the open chamber from which the slabs had been removed; the floor was covered with cave dust, sand mixed with a certain quantity of humus, and they allowed of the passage of a man for

only a short distance. Therein were discovered three complete human skulls and two lower jaws, but no other human bones. Under the accumulation of animal remains that filled these fissures other human skulls, parts of skulls, and a small number of other human bones were discovered; also a few bits of calcined wood, and one small stone-scraper. There had been no percolation of water through the roof or sides, and we were told that the workman who discovered the entrance had found several skeletons, but that, hearing of our arrival to investigate the contents of the cave, he had reburied them no one knew where, and had disappeared. He certainly was not to be found at the time of our visit, nor has he been heard of for the last three years.

The person who brought me information regarding this cave had with him a number of bones and teeth, and among them the two implements figured in Pl. XXVII., Fig. 202, which are, or were, primarily the horn core of the Cape Eland (*Taurotragus oryx*). Several of the bones alluded to, including the horn cores, bore traces of chipping, of which traces it was very difficult to say whether they had been caused by cutting stone implements or by the gnawing of animals such as the hyæna, the teeth of which leave on the bones it has gnawed most characteristic traces. But a second examination of the cave settled that point. Marrow bones had been cut open both artificially and by crunching; a few of the former bore still traces of charring, whereas those crunched by either hyænas or possibly also by lions showed on *each side* of the fracture the marks of teeth. Moreover, many bones not containing marrow, such as those of the elephant, rhinoceros, and hippopotamus, had their ends plainly gnawed. Many of the smaller bones bore also the imprints of the teeth of small carnivora. The characteristic marks left by the hyæna, especially on thick long bones, so greatly resemble that produced by the slanting blow of a hatchet, that had no human remains been ultimately discovered in these fissures one might have been justified in considering these two horn cores as part of the animals devoured or gnawed by beasts of prey. But on close examination I found that the upper right part of Cut 1 of Fig. 202, from the top to the beginning of the curve, and a little before the middle, is not gnawed, but deeply bruised, evidently by pounding, and that the original contour of the opposite side bears no such marks. This core was thus used as a club, and it is indeed a very effective one. The other horn core exhibits very plain, slanting cuts at the end of its thicker part, but there is no corresponding traces of biting on the opposite side. The only conclusion we can

come to is, therefore, that the slanting cuts have been produced by cutting stone implements, in helping to fashion this horn core into a club. Moreover, these clubs are, especially Cut 1 of Fig. 202, semi-fossilised, much heavier than those of recently killed animals, and their appearance is that of bone implements patinated, smoothed and hardened by long usage, whereas all the bone remains were either greatly bleached or had become very light. Many, especially those of the elephant and hippopotamus—these were mostly lying on or near the floor—were greatly decayed, some of the molars of the elephant especially.

Incredible indeed was the quantity of animal remains. Most, if not the whole, of the South African *feræ naturæ* were represented in these fissures. There lay together the bone remains of elephant, rhinoceros, hippopotamus; those of the southern whale and seal, of the lion, leopard, and smaller cats; of the jackal, otter, and Viveridæ; of the porcupine and other large and small rodents. Among antelopes are the eland, koodoo, bontebok—and bushbuck and the hartebeeste; the bush pig is also represented, and together with all the remains are also to be found the buffalo, the ox, and the fat-tailed sheep.

The extreme abundance of animal remains seems to imply an alternate occupation of the shelter by man and beast. This accumulation of bone debris has a parallel in Europe. In a Mousterian cave of the Hte. Saône, in France (Echinoz la Moline), there were found remains of no less than eight hundred cavern bears (*Ursus spelæus*). In another "station" relics of some six thousand horses were counted. In the first case it is doubtful if these terrible beasts had been laid low by primitive man; in the second they certainly had.

In the dens of the hyæna not only whole skeletons of this animal are found, but its presence or occupation is revealed by its fossilised coproliths, as well as by the characteristic teeth-marks left on the bones it gnawed or cracked, characteristics already mentioned. Dens are also found in Europe where, doubtless, beast and hunter have replaced each other; the first occupier was the hyæna, the second the bear, the third man. It becomes thus interesting to compare the result of the investigations of the Hawston cave and see if they fit or not with the authenticated conclusions arrived at in Europe.

The human skulls are found near the entrance of the fissures which are themselves separated from the large, open-mouthed chamber; there also are found a few human bones, *under* the accumulation of

animals' bones. The remains had been disturbed before a proper examination was made. When this took place, the humus of the crevices yielded very few human remains, but the skulls were either complete, or when incomplete (2), the parts had merely become separated; the sutures were intact. None of these remains has been interfered with by hyænas. Therefore they must needs have been deposited there before the advent of the latter. They had by this time been so dessicated that they could prove no tempting morsel. The dismemberment of the human skeletons is probably caused by a "remaniement," or disturbance of the cavern fissures, with their accumulation of animal remains.

But these remains do not represent whole skeletons of animals. If they did, it would go to show that they belonged to animals that took refuge there to die. This absence corresponds to, or coincides with, what is known to have obtained in the caves or rock-shelters of Europe. There the hunter seems to have been especially fond of the head and marrow bones. He seldom brought to his shelter or cantonments the whole of his quarry, especially when it was a large one. He carried to it those parts only which he relished—the head and fleshy parts. Vertebræ and ribs are seldom met with in these stations.

In this Hawston cave ribs are rare, and vertebræ scarce in proportion to the remains.

Several of the skulls of animals of prey are fractured, and it is therefore probable that these beasts were slain by man, and that the skulking hyæna or the daring jackal, taking advantage of man's absence, entered the shelter and feasted on his leavings.

Two frontal parts—one that of a young ox, the other that of an antelope—are so clearly severed that it could have been done by man only, and this with a cleaving instrument.

It is therefore probable that the cave was used first as a place of burial, in the manner described further on, in the Outeniqua caves. Game being more abundant, or edible shells less common, the accumulation of the debris did not form a shell mound. The dead would be buried or deposited in the fissures. The presence, however, of domesticated animals can only be explained by the assumption of a reoccupation by man at a later date.

At no very great distance from the Hawston cave another was found, consisting of one chamber without traces of fissures, but the only things met with there were two ostrich egg-shell bead-disks and a small scraper-knife.

This cave, situated in proximity to the other, has a parallel in the

discovery of the Coldstream cave, of which an account is given further on; but there the case is reversed. At Coldstream, besides the one containing the sepultures, there was discovered, about a mile or so from it, another cave that "contained no skeleton but a quantity of animal bones. It seemed a sort of shooting or hunting box."

This fact would add strength to the theory that the accumulation of the animal bones in the Hawston cave is due to the act of man.

About one mile from the Hawston cave, and close to the lagoon, there was found a large boucher. It may, of course, be a mere coincidence, but it is well worth noting that the clean, slanting cut so apparent at the end of the horn core, in Cut 2 of Fig. 202, was certainly not obtained by means of a knife-scraper; it appears to have been produced by a heavy cleaving implement, such as a boucher.

THE CAVES AND ROCK-SHELTERS OF THE TZITZIKAMA AND OUTENIQUA.

Let us now see if the cultural relics of the troglodytic, or cavern dwellings, Aborigines of the littoral differ materially from those of the open-air midden makers, or of the cave- or rock-shelter dwellers of the inland districts.

The caves known to have been inhabited, or in which relics of primitive man have been found, extend from the coast of the Cape Division to that of Humansdorp. It does not follow, however, that they are restricted to that part of the coast, but others have not been discovered hitherto either to the west or to the east of that area. They appear to be more numerous between Knysna and Humansdorp. In the words of Mr. H. D. R. Kingston* "the coast for many miles about Cape Seal (Rob Berg) is rocky and abrupt, open or sandy spaces of shore being few and far between. The land falls suddenly and often almost precipitously from the 'flats,' a tableland or shelf at the foot of the Outeniqua Mountains, with a face to the sea of some 300 or 400 feet in height. This is scored or intersected by a number of small rivers which have cut their way deep into the land, forming narrow and densely wooded kloofs. The caves, or rather fissures, are usually found midway between the top, where the rough vegetation of the veld above fringes over, and the trembling sea below."

It may be added that most of these recesses are very difficult of access; and this point is of great importance because it shows that

* "Notes on some Caves in the Tzitzikama or Outeniqua District, and the Objects found therein" (*Journ. Anthropol. Inst.*, xxx., 1900).

the inmates took shelter there as a protection from wild beasts, and possibly also from men.

Thus Leith,* speaking of the caves at Mossel Bay: "It could only be reached by scrambling up a very steep talus of rubbish at the risk of slipping downwards into deep water, or from the top by a still more dangerous path."

Ibid.: "I found the entrance to the cave about 15 feet above sea-level, in a cliff about 200 feet high. The cave is reached from the top by climbing down a very steep and rocky path, at the foot of which a 30-foot ladder takes one to the entrance. As this could not possibly have been the pathway used by its former occupants, I looked about for another, but in vain."

Kingston states: "To our cave we scramble and climb from the shore below and enter by the roughly rounded window-like opening to the west."

Ibid.: "Our better fortune was to find another cave at a greater height above the sea, but so difficult of access that it had evidently remained intact."

Writing of the Coldstream cave just discovered, Mr. J. S. Henkel, of the Forest Department, who has very kindly set inquiries on foot in his Conservancy for the discovery of such caves and their contents, writes: "The cave was very difficult of approach. This cave, so called, an overhanging mass of rocks, is about 100 yards distant from the mouth of the river, and the floor of the cave about 50 or 60 feet above sea-level." An examination showed that there were no signs of any human beings having, in recent times, entered or in any way disturbed the cave."

These caves or recesses are filled with debris of shells, even up to a short distance from the roof; occasionally bat guano helps to complete. Intermingled with the debris, which is often of considerable depth, are found, either on the surface or in layers, stone and bone implements, as well as bones of fish, mammals, birds, ornaments made of sea-shells, and skeletons so numerous, that the question arises, Were not the caves and shelters where skeletons abound, used as necropolises rather than as habitations for the living? They may prove to have been both.

In the open-air middens of the sea-coast I have recorded the find at Blaawberg of the skeleton of a woman under a layer of shell debris that had been a midden; but there is nothing to prove that the place, or that particular spot, was abandoned either temporarily

* G. Leith, "On the Caves, Shell Mounds, and Stone Implements of South Africa" (*Journ. Anthropol. Instit.*, xix., 1899).

or for good, or that the dwellers had selected another more or less distant spot to resume their mode of life. The evidence of the shell mounds of the San Francisco Bay region might be comparable to ours.

"These people buried their dead in the collection of shells and other debris in the neighbourhood of their dwellings." * But there is no suggestion that they resumed their abode *above* their dead. In these caves or shelters of the Tzitzikama we, however, meet with evidence of a nature not hitherto recorded, and the parallel of which has also not been found hitherto, because in several cases the dwellers seem, in spite of some precautions against the possible return of the dead, to have either continued to live in the necropolis, or to have returned to it for the resumption of their mode of life.†

Most of these caves have been disturbed and their contents sifted and removed, because the farmers in these parts utilise the mixture of dark loam, decomposed shells, wood ashes, and especially bat guano which fill the caves, as fertiliser for their lands. With this debris, which has been known to be 20 feet thick, have been found coarse flake-knives, some of them of large size and made mostly of a glassy quartzite (Pl. XIII., Fig. 104).

But before discussing their affinity with the South African relics, I shall quote here original accounts given me, which will, I am sure, prove of interest.

The first of Mr. R. E. Dumbleton's communications, relating his search for skeletons, was printed in the *Cape Town Diocesan College and School Magazine*, 1892, but he has since supplemented it on several points.

"The cave is situated not far from the mouth of the Touw River in the George District, Cape Colony, and contains a very thick layer of guano. At various times people digging in this have discovered bones, shells, ashes, and other unmistakable traces of human habitation; but it was not until about a year ago that any human remains were discovered. Then a farmer, anxious to turn the guano deposit to account, removed a quantity of it, and in so doing discovered a skeleton, apparently of a young man. However, either from curiosity, superstition, or some other cause, the skull was broken in and some of the bones were lost. For the purpose of

* N. C. Nelson, "Shell Mounds of the San Francisco Bay Region."

† Sparrman, who visited Tzitzikama in 1775, says of some fugitive Hottentots which he met on a farm in the "Lange Kloof," that they confessed having come from the Outeniqua by crossing the mountains; that they had there a good master, but that they preferred returning to their country, especially because the death of one of them made it a law that they should change their abode.

procuring one or more skeletons, I proceeded to this cave during the recent vacation. I commenced my search near the middle, and close to where the former discovery had been made. After digging for a short time a skull appeared at a depth of about 2 feet from the surface. I removed the layer of earth carefully, so as to discover the exact position of the skeleton. When this was done, I found that it was completely enveloped in a thick casing of dry sea-weed (*Zostera maritima*), which was still in a perfect state of preservation. Inside this again was the hair of a bushbuck skin, which had evidently been wrapped round the body. The skin itself had entirely rotted away, but the hair was still in good state of preservation. After removing all this very carefully, the position of the whole body was made quite clear. It was lying on the left side, facing towards the back of the cave, with the knees and hands doubled up to near the chin. Having ascertained this, I proceeded to take up the bones. On coming to the head I discovered immediately in front of the face two tortoise-shells, which, however, fell to pieces on being touched. With these there was the lumbar vertebra of a large ruminant, several flint scrapers, and also a peculiar instrument consisting of a piece of flint fixed in gum-cement, in which was inserted a piece of wood about 4 inches long, serving as handle. The latter, unfortunately, was perfectly rotten, and broke off short. On raising the skull I found that it was resting on a third tortoise-shell, which also fell to pieces. On examining the teeth, I found that they were all very much worn and several were decayed, while one or two were missing altogether.”*

Encouraged by the result of his find, Mr. Dumbleton began excavations anew, with the following result :—

“ We commenced operations round about where the previous two skeletons had been exhumed, and found nothing but layers of ash and shell with a few bones of animals here and there. Among these bones were some of large fish, birds, bucks of different sizes, and buffaloes.

“ Then we tried a slightly higher part at the back of the cave. Here we found a large quantity of dried grass spread out over a considerable space, which was evidently used as a bed. This was quite near the surface, and below were the usual layers of ash and shells. We next turned our attention to the mouth of the cave, where the soil is considerably deeper, and here we soon found some

* This skeleton, which proved to be that of an adult male, was presented to the Museum, and is now mounted. The implement, now also ours, with the wooden handle, is figured in Pl. XIX., Fig. 150.

dry sea-weed at about 3 feet from the surface. Knowing that there would be a skeleton below this, we removed the earth from above it very carefully, and then took off the covering of sea-weed, leaving the bones exposed. We at once saw that it was the skeleton of a small child having still a full set of milk teeth. It was placed in a crouching position, face downwards, and with arms and legs doubled up behind the body, probably with a view of putting it in as small a hole as possible. In taking up the bones I discovered a number of bits of ostrich egg-shell, each of which had two holes in it.*

"These had evidently been strung together for a necklace and buried with the child, but there were no other ornaments to be found. The skeleton itself was in a somewhat dilapidated condition, the skull being in several pieces, and the lower jaw broken in half, so that it would appear to have been buried at a very much earlier period than either of the other two skeletons, which were in perfect condition when taken out. The position, at the mouth of the cave, and the depth at which it was buried also point to the same conclusion. There seems to have been no sort of ceremony about this funeral, such as placing a tortoise-shell for the head to rest on, nor did I find any implements about the head as was the case in the last discovery."

At my urgent request Mr. Dumbleton resumed his search, and he investigated five caves at Rob Berg, Knysna District, and found there several skeletons which he sent us with the following account of his search. (See sketch map.)

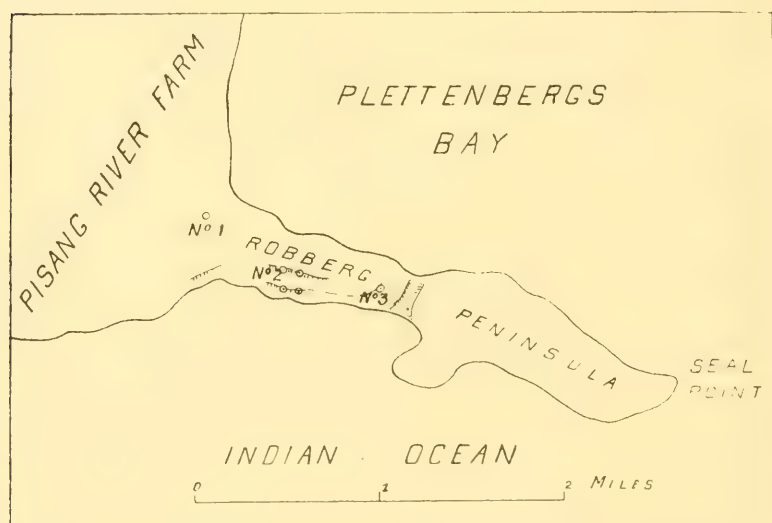
"Nos. 1 and 2 are somewhat mutilated skulls which have been disturbed from their original resting-places but left lying in cave No. 1. They are only included for such measurements as may be obtained from them, and are probably of little further use.

"No. 3 was also found in cave No. 1, very far back, and at about 3 feet from the surface lying just above the second of three distinct layers of ash and shell. All the bones found with it have been included with this specimen, but obviously many are still missing, and no trace of them could be found by sifting. A large water-worn stone—evidently used as a mill—(mortar) with a smooth groove on one side was found in close proximity to this skull.

"Nos. 4 and 5.—These two skeletons of a full-grown person and child were both found in cave No. 3, which, luckily, had never been

* I have lately seen a disk of the same material with two holes; and in the district of Willowmore were found bits of *Unio* shells each also with two perforations (cf. Pl. XXV., Fig. 187).

disturbed by guano-seekers or others. This cave is very lofty but not deep, and the skeletons were practically on the surface, No. 4 being only covered by a few inches of cave dirt, and No. 5 by so little that a portion of the skull was actually protruding when found. No. 4 was lying about 3 yards from the back of the cave, and No. 5 almost touching the rock. The graves were evidently only holes scratched in the ashes just large enough to contain the bodies, which as usual lay all *hunched up on their sides*. Both these skeletons were removed with great care. They have been packed up exactly as found, without any attempt at cleaning, as most appear to be *partly decayed and are very brittle*.



SKETCH MAP SHOWING POSITION OF BUSHMAN CAVES AT ROB BERG, KNYSNA DISTRICT.

"Very few implements of any sort were found with these specimens, but a few stones which may have been scrapers,* and a bit of pottery found on the sand-hills near cave No. 1 have been included in the box.

"Four caves (No. 2 on sketch) close together, one being very deep, were also examined, but all of these had been ransacked by guano hunters, and nothing of any value was obtained from them.

"All the caves contain immense quantities of shells and layers of ash. No paintings were found in them.

"A spot, some 20 yards in front of cave No. 1, was pointed out

* The usual uncouth scraper, of small size.

where numerous human bones have been found and dug out, but this place is now under cultivation, and consequently not worth searching over."

Mr. H. A. Fourcade, of Storms River, not very far from Rob Berg, adds his quota of observations, which, however, differ in a material point, *i.e.*, the posture of the skeleton, with that of other searchers. He wrote:—

"As to your questions, I answer them *seriatim*.

"1. The skeletons were wrapped in a cover of 'sea-grass,' probably *Zostera maritima*. I do not think that the skin of any animal was added as a wrap; traces of it would have been left.

"2. The one or two skeletons, the original position of which could be ascertained, were inhumed in a *vertical* position, as if they *had been sitting*, and with the knees tucked up.

"3. I have not noticed any implement the situation of which showed indubitably that they had been inhumed with the body. It seemed, however, that the grave had been *covered with a flat stone*, covered in turn with breccia debris."

The "sitting posture" of at least one of the skeletons here mentioned does not thus concord with the horizontal one noticed by other observers. But Mr. Fourcade emphasises it, and it must be remembered that the so-called up-country Bush people are said to have been buried in a *sitting* position.*

The news of Mr. R. E. Dumbleton's last successful search became known, and some residents of Knysna, prompted by the fabulous prices which rumour had proclaimed were obtainable for Bush skeletons, set to work to investigate all the caves and shelters that could be discovered. Several skeletons were found, but obtained in a manner that forbids any subsequent attempt at ascertaining the stratification of the caves. Mr. R. Atkinson, from whom we obtained two such relics, supplied me kindly, at my request, with the following information, which to a great extent corroborates that of Mr. Dumbleton, as well as that of Mr. J. S. Henkel.

* See L. Péringuey, "Rock Engravings of Animals and the Human Figure" (Trans. S. Afric. Phil. Soc., xviii., 1909, p. 4).

"Some years ago, in digging a grave, the workmen came across a human skeleton at the depth of 3 feet. Judging from the manner of burial, *in a sitting position*, we supposed it to be a Bushman grave" (Rev. Westphal).

"I was told by an old Bushman that it was not the custom to bury the body deep. It was generally put in a sitting position, the legs being doubled up, pressed against the body, and the head bent forward before *rigor mortis* set in" (J. S. Connan).

“When in search of Bushman remains we explored about a dozen caves between the Knysna Heads and Plettenberg Bay, and though we found several skeletons, they were all more or less in a bad state of preservation, owing to the caves being more or less wet from the overhead drip. Eventually we got to Cape Seal (Rob Berg), when about a quarter of a mile east of the one in which R. E. Dumbleton found the skeletons he sent you, we found a fairly dry cave. In this we started work systematically to a depth of from 4 to 5 feet, and after fourteen days' work we had found as many skeletons, consisting of two infants, one half-grown female child, one adult woman, and the rest adult males, all with the exception of the children, in a good state of preservation; they were lying on their sides, sometimes the right and sometimes the left, with knees drawn up towards the chin. The debris in which we found them consisted of bones of birds and animals, some sea-weed, ashes, and tons of every kind of sea-shell from the adjacent ocean. The cave was about 40 feet from the sea and about 30 feet above it. Everything in it was more or less impregnated with salt, which, in my opinion, served to preserve the bones, &c. Though the cave had a good many ash-heaps in it, we found no signs of pottery or other utensils (excepting some bone and stone knives) nor had any of the shells been subjected to the action of fire; many still had sea-weed adhering to them. I consider that the great amount of shells and other debris to a depth of 6 feet in places must have taken very long to accumulate.”

The description of a cave quite recently discovered is sent me by Mr. S. J. Henkel, of the Forest Department* :—

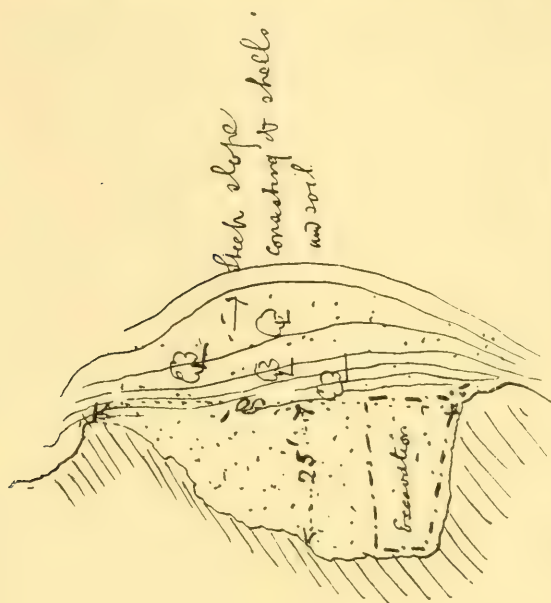
“The cave, so-called, is an overhanging mass of rock. It is about 100 yards distant from the mouth of the river, and the floor of the cave about 50 or 60 feet above sea-level. The cave is a fissure in Table Mountain sandstone which here had a steep dip. The sketches on page 155 will give an idea of the appearance of the cave.

“In order to ascertain the nature of the deposits Mr. Witcher, sen., dug a trench about the middle of the cave, 1 foot wide, across the deposit. When a depth of about 18 inches was reached the skull of a human being was found in a fair state of preservation. Mr. Witcher was much interested in this discovery, and decided to commence operations at the southern extremity and carefully remove a section.

“The material, consisting of shells, ash, &c., appeared useful as manure, and with a view to utilising it a road and footpath were constructed. The material, covering a section of about 9 square

* A short account of the excavations carried out by us in this cave will appear in an Appendix.

yards, was carefully searched and removed, in most cases by him. The excavation was commenced in the southern part of the cave



PLAN OF FLOOR OF CAVE, WHEN DISCOVERED.

FIG. 24.



ELEVATION.

—*vide* sketch. When a depth of about 2 feet was reached human remains were discovered more or less decayed owing to dampness. The skeletons were complete, but the skulls were usually found

to be broken. It was soon discovered that each skeleton had three or four flat stones placed directly over the remains. At about 2 feet 6 inches the skeleton of what appeared to be a woman was discovered; next to it was the skeleton of a child approximately two to three years old. The skeleton of the child had two flat stones above it. It was lying on its right side. The left hand was lying across the neck. The legs were doubled up, the knees nearly touching the chin. The debris was carefully removed, and surrounding the wrists and ankles were pieces of perforated bone or ostrich-shell averaging $\frac{3}{16}$ of an inch in diameter. The 'beads' were strung on a cord, which, however, crumbled away as soon as touched. One hundred and forty-two 'beads' were collected, but this does not represent the total number, as some were lost. The perforations appear to have been made in the same manner as the holes in the 'stone hammers' (!kwès)—that is to say, they were conical in shape, commenced from either side, meeting in the centre. The beads are in a good state of preservation.

"At the same elevation and underneath a flat stone, in a cavity 8 or 9 inches deep, were discovered a number of shells averaging about 1 inch in diameter, each being perforated so as to admit of being threaded, apparently used as a wrist or waist ornament (Pl. XXVII., Fig. 205). No cord was found. Ninety-one shells in good preservation were found—about a dozen or fifteen had perished.*

"Excavation was continued to a depth of about 9 feet, and up to the time of my visit in July, 1909, seventeen skeletons were discovered. In every case *flat stones were found to cover the skeleton*. These stones appear to have been placed directly upon the body, as shown by the evidence of the bones in some cases adhering to the stones, and other indications produced by decomposition of the flesh. In every case the skeletons were doubled up in a manner somewhat similar to that of the child already described. All the skeletons discovered by Mr. Witcher were lying on the *right side*. His son, however, asserts that one skeleton he removed was lying on the *left side*.

"In the course of excavation three stones were found on which drawings were executed in black.

"On No. 1 are four drawings of human beings with prominent calves and buttocks. The sizes of the figures are respectively $4\frac{1}{2}$, $4\frac{1}{2}$, $4\frac{1}{2}$, and $1\frac{1}{4}$ inches (Pl. XXVII., Fig. 199).

"On No. 2 is to be seen the figure of a human being (Pl. XXVII., Fig. 201).

* They are small examples of *Cassia achatina*, Lam.

“No. 3 contained four drawings of animals; the largest animal appears to represent a wildebeeste, two smaller animals drawn facing one another appear to be steinboks, and the fourth a bluebuck.

“Unfortunately the drawings on stone No. 3 have disappeared, as it was left exposed to the weather.

“On the walls of the cave, which are discoloured by smoke, no drawings have hitherto been discovered. In the course of excavation different coloured bits of clay were found. The drawings on the flat stones are made with charcoal.

“As already intimated, the debris in the cave was systematically removed in layers, bagged and used as manure, on lands in the neighbourhood. The straight perpendicular wall of the northern face of the section shows clearly the method in which the debris accumulated.

“The latter consists principally of various species of shells, ash, and fragments of bone, both of animals and fish. Interspersed here and there are chips of stone, water-worn stones, and household tools consisting of stone plates,* stone hammers, scrapers, bone needles, &c.

“This debris appears to have accumulated entirely by human agency, that is to say, it is the waste products of articles of food, such as shells and bones of animals and fish used, the ash from fires, &c. The fires appear generally to have been made some distance from the walls of the cave—say 10 to 15 feet—because little or no ash is found near the walls or the looser texture of the debris. It is interesting to note that no attempt appears to have been made by the inhabitants of the cave to remove any waste material. There are, however, indications—though further investigation is required—that fires were made above the graves. There are no indications that the graves were of any depth; on the contrary, from the number of skeletons found at varying depths it would appear that only shallow excavations were made sufficient to admit a corpse and to permit of the flat stones being placed a few inches below or flush with the then floor of the cave.

“In order to verify the statement made by Mr. Witcher, I carefully examined the section of the cave exposed by the excavations up to the 14th of July, 1909—the date of my visit. I found an excavation about 9 yards square and a depth of 9 feet. In my presence a further layer was removed and a skeleton discovered. It had above it three flat stones. It was lying on its right side with knees drawn up to the chin. The arms were also bent. The skull was

* We shall see later on that these are painting palettes.

broken, probably owing to the weight of material above it. The skeleton appeared to be that of a full-grown man and much decayed.

"In another part of the cave, about 2 feet below the present surface, the skeletons of two children were found. In these two cases only one flat stone was placed above the body. In one case, part of the skeleton was found adhering to the stone, showing clearly that the stone was placed directly above the body. The stones removed from the graves were carefully examined, but no indications of paintings on them were found.

"The cave still contains a great deal of debris, and it is estimated that at least fifty skeletons may still be found.

"Up to the present over twenty skeletons have been discovered in this cave." *

A communication of this importance requires, however, careful perusal, and I had less hesitation in asking Mr. Henkel for more details because I enjoy his friendship, and I have good reasons also for appreciating his power of observation.

This is his answer to my further queries: "I notice in your note of the . . . that you lay emphasis on the position of the skeleton. All I can say is, the three I took out were distinctly lying on their sides. W. says that all those he had taken out, about seventeen, were lying on the right side. From the position of the stones it is quite evident that the bodies were not buried in an upright position. You will observe from my account that there was no direct evidence to connect the stones decorated with drawings with skeletons, although in the first instance I was led to believe that this was so.† Further with regard to your letter of . . ., the skeletons I removed showed no evidence of a bushbuck skin. Fine remains of organic matter were discovered, but nothing to show that it was other than the human remains. No tortoise-shell, no implement as sketched by you.‡ Numerous round perforated stones (!kwès) some showing many chips, and seemingly used for a long time, were also discovered."

The evidence obtained from this Coldstream cave throws a good deal of light on the mode of life of the people that inhabited it. New facts of very great importance are revealed; others corroborate discoveries already made in similar localities, and it is interesting to

* The relics mentioned in that account of the discovery of the Coldstream cave are now in the Museum Collection.

† Subsequent excavations carried out by us have proved that these stones with paintings were deposited on the skeleton.

‡ That of Pl. XIX., Fig. 150.

compare these results carefully. Let us therefore examine in detail the domestic utensils found in these Outeniqua-Tzitzikama caves.

Of stone implements we have large scraper-knives, several are figured (Pl. XIII., Fig. 104); some have worn edges, in others that part is sharp. None of these, however, seems to have been buried with the corpse, whereas the ornaments of the defunct in several cases were.* The two exceptions known are the hafted tool (Fig 150, Pl. XIX.) from the Touw River cave discovered by Mr. Dumbleton, and another from Rob Berg, acquired lately by the Graham's Town Museum.

The knife-scrapers are of the same material and shape as those found at Cape St. Blaize, and may be of any age, but we possess a lanciform one which is as much worn by exposure as any I have selected in order to demonstrate the antiquity of these artefacts.

The other stone implements are pounders and grinders of the usual shape (Figs. 168 and 170, Pl. XXIII.), some are somewhat cylindrical but they concord more or less with those found in the open-air middens.

Then, we have the !kwès, but although it may safely be said that two of these perforated, or partly perforated, stones are never alike, we notice in those occurring in the Tzitzikama caves a great difference. None is as large or as thick as those found up-country or outside the shelters. There is a tendency to flatness, and even to reduce the natural flatness of the stone selected; Cut 2 of Fig. 156, Pl. XX. is only 1 cm. thick, and No. 3, 2 cm. in thickness. I know of examples one face of which has plainly been ground to reduce the thickness, and the convexity of the other side is very little pronounced. The median orifice of those flat disks is very small, *cf.* Cut 2 of Fig. 156, Pl. XX. This disk is so thin that it might be taken for a spindle-weight, whereas it is doubtless an ornament. One side of Cut 3 of Fig. 156 shows plain marks of it having been used as a grinding tool. Even the larger !kwès, perforated or not, are somewhat depressed (Cut 1 of Fig. 155), and in this they correspond to a good many examples found in the Cape Peninsula and also in the inland districts (*cf.* Nos. 1, 3, 5, of Fig. 153, Pl. XX.).

These flat disks with a very small perforation are not, however, absolutely restricted to these caves. Cut 1 of Fig. 156 was found in the Stellenbosch District while ploughing a field. But it is the only implement of this kind found outside the Tzitzikama area.

* See also Appendix.

In this Coldstream cave were also found plates of slate not more than 5 mm. in thickness (see text-fig. 25, and also Pl. XXVI., Fig. 196).

Their use was explained quite lately only by the examination of a similarly shaped laminate stone, resembling the left specimen of



FIG. 25. $\times \frac{1}{3}$.

Fig. 196, and covered still with a red pigment—ochre mixed with a fatty substance, which shone more and was thicker on the edges. These implements are therefore proved to have been used as palettes, not palettes from which the Bush artists picked their paint, but an implement by means of which they besmeared their body or parts of the body.

This type of palette is not, however, restricted to the caves of the littoral. The specimen that has still retained the pigment on one side was discovered in the Oliphants River valley, Cape Colony, in a rock-shelter with rude paintings. The example on the right of Fig. 196 is from the Beaufort West District of Cape Colony. So far I know of these six implements only, but others may have been overlooked.

An interesting point is that these besmearing palettes are identical, some in shape, but all in thickness, to those discovered in the dolmens (Menhirs, Cromlechs) of Aveyron, in Southern France, and also in prehistoric Egyptian tombs.*

Had not the preservation of this red pigment indicated plainly the use of these implements there would have been justification in considering them as braying tools, for they fit the hand wonderfully well for this purpose, and there is also no reason for their not having served as such.

Our troglodytes brayed skins; of this there is little doubt, and, if there was any as to their wearing them as clothes or protection against the rigour of the cold season, this doubt will be easily set aside by a glance at the bone bodkins occurring in these caves. Cut 5 of Fig. 172, Pl. XXIII., was found in the rock-shelter where the doubly perforated ornaments (Fig. 187 of Pl. XXV.), made of nacreous shells, were discovered; Cut 4 of the same Fig. (the lower one) from one of the Knysna caves, has counterparts in Cut 4 of Fig. 172, Pl. XXIII. Fig. 194, Pl. XXVI. represents wing-bones of sea-birds turned into awls or needles. The great interest attaching to two of the examples here figured is their ornamentation, which in Cut 2 of the Fig. consists of fine vertical, parallel lines, and of others crossing each other at such an angle as to produce lozenge-shaped intervals. In the middle of Cut 1 of the same Fig. we have a chevron pattern, somewhat rough, but it is the *first* and probably the sole example of its kind known.†

But there are in the Tzitzikama-Outeniqua caves bone implements other than awls or bodkins. Cut 2 of Fig 193 appears to be the bone tip of an arrow; the bone-point (Cut 6 of Fig. 193), might certainly have served as an arrow-head. Then, in addition to these, we have bone knives. Fig. 1 of Pl. XXIII. is a very

* Cartailhac, "Les palettes des dolmens Aveyronnais et des tombes Egyptiennes" (Bull. Soc. Arch. Midi., 1906).

† Among the Bantu races, especially the Bechuanas, this chevron pattern is in general use.

effective instrument for detaching shell-fish. Judging from the length and slant of the cutting part its maker and presumably owner, was left-handed. Cut 2 of Fig. 193 is an ivory knife that has seen much service. It is a stout one, bearing on both faces the unmistakable traces of the small stone implements which helped to fashion it into its present shape. Cut 1 of the same Fig. is a strong borer, also made of bone. All these bone tools bear that unmistakable patina that long use at man's hand imparts.

The ornaments that have been found in the Tzitzikama caves, seem to consist mostly of shells perforated so as to be strung, or worn singly. Thus in Fig. 203, Pl. XXVII., the perforation of the shell (*Conus rosaceus*) is transverse, and was caused, therefore, by a cutting implement; Fig. 204, a limpet (*Patella cochlear*), is, on the other hand, perforated by a piercer, and so are all the shells of *Cassia achatina* (Fig. 205), which formed either a necklace or a girdle.

These examples were found on the skeletons or adhering to them, and anklets of ostrich egg-shell beads, recalling the form and size of those encircling the lower part of the trunk of the semi-fossilised skeleton of the Blaauwberg midden, were discovered on the ankles and arms of one of the inhumed children in the Coldstream cave and the Touw's River caves.

This would show that although it may not have been a general practice the ornaments were buried with the body.

And now the question arises, Do these traces of culture, simple though they are, denote a more advanced stage in the troglodytic Strand Looper, for Strand Loopers they indubitably were—than in those that lived in the open-air middens, or in the up-country caves or rock-shelters? The answer is in the negative.

In one of my papers on Rock-engravings of animals, the human figure, &c.,* I have by inadvertence allowed to be printed the statement that it was very doubtful if the Strand Looper belonged to the artistic race with which the Bushman is connected, because so far no relic of art in any form had been found in their shelters or sepulchres. I had the less justification in allowing this statement, which was really intended to disprove the connection between rock-gravings and Bushmen as the aborigines that produced them, to go to press, that for many years we had in our Collection a fragment of rock found in one of the Knysna caves, by Mr. Chevalier, somewhere in the early seventies.

This picture (Fig. 200, Pl. XXVII.), is not of parietal, or wall nature; it was executed on a fallen rock fragment. In view of what we

* Trans. S. Afric. Phil. Soc., xviii., 1909, p. 418.

know now regarding the position in which skeletons lay, it is perhaps permissible to consider the scene as not men dancing, but men inhumed or going to be inhumed.

For a long time this example of the troglodytic art remained unique, and it was necessary to wait for new discoveries before asserting that the dwellers in caves and those living in the open had the same artistic temperament and the same ability to express it. The fact may be said to be clearly established now.

In the Coldstream cave were found three charcoal paintings. The first Fig. 200, figured in Pl. XXVII., may have been parietal, yet it is difficult to accept the theory that the fragment fell from the rock as it now stands. But the doubt is not permissible as far as Fig. 199 is concerned. This is not a parietal painting. The scene is executed on what was once a quern or mortar, with only a moderately deep artificial depression. I know of no other such occurrence here, but Mr. J. M. Bain informs me that near the mouth of the Orange River he found a scene painted on the shoulder-blade of what must have been a very large seal.

Both these representations were found in the stratification of the Coldstream cave; there is evidence, now, that they were laid on the skeletons. They are fading so rapidly that we had a great deal of difficulty in reproducing them, and the "touching" of the negatives however skilfully made by Mr. A. R. Walker, one of our Museum assistants, may prove to be very slightly inaccurate. Mr. Henkel reports that the third one became obliterated as soon as exposed to light. The representation on this quern (Fig. 199) is that of a dance executed by women. The *steatopygia*, the extremely swollen calf of the legs,* and the hanging *mammæ* go to prove it. The head of the child and his position are somewhat realistic. There is another feature which is of extreme importance; it is the half-moon-like circle surmounting the heads of the dancers.† In a large hunting scene from the Cedar Mountains (Cape Colony) a similar half-moon, or rather crescent, surmounts the head of the hunters who, armed with a club, go to attack a herd of elephants.

The same head-dress is also to be found on rock-paintings in the Piquetberg District of the Cape Colony. Could this be a "totem"? But that it is a distinctive badge, there can, I think, be no doubt.

* I have good reason to believe that this extraordinarily large representation of the legs is due to the leather or grass rings worn formerly by these natives, especially the females.

† I must, however, explain that on the partly obliterated original these crescents are not quite so plain as shown in the illustration, but after a very careful examination I am satisfied that they were meant to be as now represented.

And on the whole these painted scenes, and also the "mobilier," or domestic implements, go to show that these cave-dwellers were members of a race that was not necessarily troglodytic and sedentary; in all likelihood they also sallied forth as their wants or desires prompted. It might be urged that, safe from foes in their dwellings, they led there a quiet, perhaps simple, certainly monotonous life; that there they were born and thereafter buried. We have, however, in addition to the one adduced, other evidence that such was not the case, and that although there may have been among the shelter-dwellers some "stay at homes," others went abroad. One of my reasons for making this assertion is the find in the Coldstream cave of two crocodile teeth, pertaining to an animal of no mean size.

Although the rising of that part of the coast is not only far from improbable but most likely, yet it would be rash indeed to assert that the climate had altered so much since man's occupation of the cave that saurians, known to require tropical conditions, could have existed in the Coldstream River. It is simpler to conclude that these teeth were brought to the cave from distant parts.

We have also pictorial evidence of a similar character.

Fig. 198, Pl. XXVII., is the reproduction of a "Bushman" painting, from the "Lange Kloof," not very far from Knysna and Humansdorp. The interest attaching to this painted scene is not the human head on the left, executed posteriorly probably by a shepherd, nor the delineation of the seals, also on the left, but of that of what is unquestionably a giraffe.* Like the crocodile, the giraffe requires tropical conditions and also a very dry climate—conditions not obtainable in the Tzitzikama-Outeniqua Districts.

We are thus faced with two alternatives: either the climatic conditions have changed since the occupation of the caves by these primitive aboriginals, a proposition which postulates an extreme antiquity, or—and this is much more likely—these troglodytes were

* Difficult as it now is to endeavour to explain the meaning of some of these Bush paintings, several figures of this scene speak for themselves. In the centre is a hive-hunter smoking bees. The seals are typical—some painted red, others white. At the bottom is a dog chasing a jackal. The use of dogs by Bush-people must of necessity, have been a late innovation, and therefore the age of the painting must be deduced from this fact. The hand, painted red, is plainly that of a human being, bedaubed with paint, and clumsily pressed on the rock. Had it not been done so clumsily it might have afforded valuable information. Abbé Breuil has recorded several impressions of the same kind in the now famous Altamira caves, and it is of interest to mention that in some cases, one of the fingers was mutilated. This mutilation was by no means uncommon among the Hottentot-Bush people.

great rovers, and had seen in their wanderings towards the North both crocodiles and giraffes. They, or at least one of them, retained such an impression of the latter as to be able to retrace one, awkwardly it is true, but none the less realistically, on his return to the South.

THE INLAND DISTRICTS ROCK-SHELTERS OR CAVES.

If, leaving the littoral, we proceed to investigate the rock-shelters of the inland districts, we find there, also, in addition to the characteristic rock-paintings, relics of a stone and bone industry.

As long as the cave-dwellers' centres are not found far from the littoral, there is some similarity in the domestic implements—not in the implements themselves, but in their execution. Thus, at Montagu, Cape Colony, in a cave-shelter filled with bat guano, was found under several feet of this material the wonderful club represented in Pl. XIX., Fig. 153; with it was discovered the stone bead, (No. 3 of Fig. 186, Pl. XXV.). At the entrance of the rock-shelter were a few painted figures. It is interesting to note that this club is really a phallus, bearing plainly the intaglios of a stone scraper-knife. Made of one of our hardest indigenous woods (*Olea spec*), it has been thinned at the end so as to allow of a small hand, like the one we know to prevail among our present Bush races, to grasp it firmly. The shape and composition of the bead will be treated in the chapter dealing with ornaments. Human bones are said to have been found in the Montagu cave, but I have seen no proof of their occurrence.

That the food of the aborigines of the littoral was mainly shell-fish must be readily admitted. But the inland districts aboriginal did certainly appreciate fresh-water molluscs, and their remains are often found in rock-shelters. The contents of one sent us lately by Dr. C. E. Piers, occurring in the Beaufort West District of the Cape Colony, include nacreous pieces of the large fresh-water bivalve *Mutela wahlbergi*, as well as pieces of the sea-shells *Patella* and *Haliotis*.

It is thus probable that these rock-shelter dwellers resorted to the sea, for a change of diet, prompted, maybe, by a craving for salt or salted food.

But so far as our knowledge of the relics left by the up-country cave-dweller goes, it may safely be stated that the more removed from the littoral, the more primitive is the culture, even when his talent at portraying is superior. The stone implements found in

the caves or rock-shelters of West- or East-Griqualand, Rhodesia, &c., are very primitive indeed, whether these caves contain paintings or not (*cf.* Figs. 133, 134, 135, 136, Pl. XVII.). In Griqualand-West we have—but not well authenticated—a few pounders and !kwès, in Rhodesia none has been found. They may be discovered ultimately, but they are not known, so far, to occur there.

In the Orange River Colony, however, we find a connection with the culture of the littoral. The bone bodkins (Fig. 195, Pl. XXVI.) are not unlike those from the Tzitzikama-Outeniqua caves, but they are not so well finished; the flattened appearance of the two examples on the right of the Fig., which show a great deal of usage, point, however, to another pursuit—that of mat-making. The ornaments are also of another style (Figs. 206, 207, Pl. XXVII.), &c. There is a distinction, perhaps more apparent than real; but nevertheless, on the whole, the culture shows retrogression.

The following is the inventory of the domestic appliances of a rock-shelter cave found between Wepener and Dewetsdorp, in the Orange River Colony. They were presented to the Museum by Mr. John Wood, and are illustrated in Pl. XXV., Figs. 185, 188, 190, 191, 192.

Two bone points (Nos. 6 and 7 in Fig. 185), are made of ostrich bone: fig. 7 is blunt at tip, but had plainly been sharp once; fig. 8 is pointed, and the point corresponds with the groove in the small fragment of stone (No. 2); there is another fragment (No. 13) bearing two grooves, one of which was intended for producing a sharp point, judging from its smaller diameter. Nos. 8 and 10 are tiny scraper-knives, and 9 is an agate core from which No. 10 was produced. Nos. 4 and 12 represent horn cores, the tip of bush-buck horns; in addition there is a partly charred stick of the thickness of a pencil. No. 5 is a very small muller or brader, and No. 1 a naturally rounded pebble that shows no trace of usage. No. 11 is undoubtedly the most effective implement among these domestic appliances. It is a piece of flat stone of which the crescent-shaped upper part has been artificially ground into a sharp cutting edge.

Whether due to exposure or to age, the horn cores and also the bone awls show signs of extreme decay; the awls having become very brittle and the horn cores very much split and grooved.

Pottery of four kinds was also found in this rock-shelter. Fig. 190 represents two fragments with decorative patterns. In No. 1 the incisions could have been produced by means of the

bone awls (Nos. 6 and 7 of Fig. 185), or the scraper (No. 8 of the same Fig.) and the elliptical impressions on No. 2 also by the same tool.

These fragments of pottery are not sufficiently large to enable us to restore the original contour and to decide whether they were conical or not.

In the same shelter were found undecorated pieces of enormously thick earthenware (No. 2 of Fig. 192), as well as some of a thinner kind (No. 1 of the same Fig.), and also a large fragment (Fig. 191), which is the flat bottom of an evidently massive earthen pot. The connection of that kind of pottery with the mobilier here described is, however, doubtful.

Of the bill of fare of the inhabitants of this shelter we have also traces. There were found several valves of the fresh-water shell *Unio caffer* (Fig. 188, Cut 2); part of the lower jaw of the porcupine (Cut 3); bits of ostrich egg-shells (Cuts 5 and 6), that probably might have been eventually turned into perforated disks. Cut 4 is a piece of the leg-bone of an antelope blackened with age, Cut 1 is that of an ostrich and deserves special mention. In the inner part is an artificial groove made in such a way that either part when eventually detached, would be already adapted partly for the grooved sharpeners (Fig. 171 of Pl. XXIII.), by means of which it would become ultimately the bone head tipping the arrows (Fig. 142, Cut 1).

Small and few are the household goods of the occupier of this shelter: his industry is indeed primitive, for there is no reason to believe that he has removed the greater part of his mobilier.

He is a nomad; in his pursuit of game, perhaps also to avoid being pursued, he must not be hampered in his movements which perforce must be rapid. Hence the paucity of utensils, hence also their reduced size. Discarding the pottery he will take with him his tiny tools—certainly a not overwhelming burden in his search of pastures new.

I have selected for illustration the contents of this up-country rock-shelter from among many known to me, or the contents of which are stored in the Museum, but the diminutive size of most of the implements found in the caves or rock-shelters other than those of the littoral is apparent throughout. Whether occurring in place with paintings, from which we would conjecture that these shelters had been occupied in somewhat more than a spasmodic manner by a clan or a number of people, or in places from which the number of these utensils implies occupation by either a single, or at most a few families; or, again, whether these

shelters show or not remains or traces of mural decorations in the shape of paintings, small implements *only* are met with. Fig. 133 represents eleven scraper-knives from Matoppos, Southern Rhodesia, where parietal paintings occur; Fig. 134 of eleven scraper-knives from Modderpoort, Orange Free State, where paintings are also found; Fig. 135 implements from a rock-shelter which, like the one I have dealt with, is also from Smithfield, O.F.S., and without any painting; and Fig. 136 similar pieces from the neighbourhood of a large cave full of frescoes in the Prieska District, Cape Colony.

Fig. 137 in Pl. XVIII. is very instructive. It represents a gun and a spade—terribly symbolic of the fate of the race—cut or fashioned of wood, and discovered in a small rock-shelter in the District of Victoria West, Cape Colony, with traces of fire, &c. Together were found the three small knife-scraper tools used for the fabrication of these wooden representations (Nos. 3, 4 and 5). That they are of very recent age is obvious; but we have no evidence of these pygmy tools having been hafted or held in a handle by gum-cement. Yet had they in this instance been so treated traces of that mode of attachment would have certainly survived the comparatively few years that have elapsed since they were manufactured.

The conclusion is that the man who used these shelters trusted to and relied on his bow and poisoned arrows; the rest is of no great consequence to him. Any stone will do to cut his quarry; has he not his firesticks with him? are pots so difficult to make, roots so difficult to grind? But his arrow has to be tipped with flakes with a sharp edge—stones of a kind, however, which are not found everywhere; hence, the small agate nuclei he carries with him, the small grinder with which to prepare the poisoned paste he uses for his arrows. He may have known the bouchers, and perhaps the men that used them. What matters to him? he has now the dreaded weapon before which every other aboriginal flees. Boucher-maker probably he never was, and had he been it, what would he do now with these ponderous weapon? Is not the small chip of agate sufficient to bring his quarry down? Is not any stone he may pick sufficient to break the marrow bones without fashioning it at great trouble into an amygdaloidal shape and carrying it wherever he roams!

Is this man the most primitive of mankind? Are his stone implements, then, the true eoliths, the precursors of the Chellean-Mousterian bouchers or other tools of those periods?

No, plainly not. He is an example of regression as far as the lithic culture or industry is concerned, but this regression in

one direction implies a singular case of advance in another—an advance which permitted of his survival. He, no longer a fabricator of large tools, contrived to outlive those who were, and for aught we know—and it is not such an improbable hypothesis—he took their place, having mastered them through the efficacy of that tiny weapon which he invented, namely, the poisoned arrow. Craft *versus* brute force.

CHAPTER XVII.

THE SEPULTURES.

If we compare the relics, as now revealed, of the open-air middens, caves, or rock-shelters of the littoral, as well as the few yielded by the inland caves or rock-shelters, one thing stands out, namely, that the culture, as indicated by the stone- coupled with the bone- industry, has many points of affinity, if it is not identical.

But the style of burial which we know now prevailed, or was followed in the George, Outeniqua, 'Tzitzikama caves, differs so much from what is known to obtain elsewhere in South Africa, that it was quite justifiable to expect that there should be found with the skeletons, and in addition to scraper-knives, some Palæolithic implements, owing to this style of sepulture being probably more ancient. But such is not the case, and it is the more surprising that these large palæoliths are almost beyond counting in South Africa, and they are also far from uncommon on the tableland at the foot of the Outeniqua, called the "flats," not far from the cave recesses.

Sparman, the most credible of the early travellers in South Africa, visited in 1775 the very parts of the Cape Colony where the burial caves or rock-shelters occur, and he tells us most emphatically that the Hottentots bury their dead naked or wrapped in their "kaross" * in the ground, or thrust them into crevices of rock. He, unfortunately, does not mention the attitude imparted to the body after death. Kolben, who preceded him (1705), goes into more details, and although his veracity has been often impugned, I have found that his statements were far from being quite devoid of truth. But he certainly exaggerated the facts.†

* A covering or mantle made of sheep or any other skin.

† In the posthumous account of his visit to the Cape by Abbé de la Caille (1751), whose "severe probity was much shocked at the want of veracity of Kolben," it is admitted that the latter's statements were really culled from, or supplied by, Mynheer Grevenbroek, Secretary of the Council of Policy, who had recorded in writing what the Hottentots whom he had met had told him in answer to his questions.

Speaking of a Hottentot who breathed his last, he states that his friends "bend his body, in such a manner that his head is brought between his legs, so that it assumes the foetal form."

All the accounts of the excavations agree on one point, and that is that the skeletons were lying in the *foetal* posture, but Mr. Henkel has made it quite clear that in the Coldstream cave flat stones were placed over the body. These stones are some 18 inches long and wide, and from 3 to 4 inches thick. At Storms River, Mr. Fourcade, in search of human remains, says that it seemed as if the grave had been covered with a flat stone.

Mr. Dumbleton and Mr. Atkinson have not met with the stones, but, not being aware of the fact, it is quite possible that they did not notice them.

We have thus proof of a burial rite, which, as far as we now know, is peculiar to the littoral troglodytes, but which does not appear to have been followed by all. At Touw River, Rob Berg, and Storms River, the skeletons are wrapped in sea-weed; one is, in addition, shrouded in a skin. With it were discovered remains such as tortoise-shells, that crumble to shreds as soon as handled or exposed to the air, and a hafted tool, the scarcity of which in these sepultures is not easily accounted for except on the ground that, in other cases, the wooden hafting decayed without leaving any trace. In the Tzitzikama cave sea-weed does not seem to have been used in the burial, but we have there placed over the body stones, some of which still retain traces of fire on the upper side. Is it permissible to draw from these discrepancies the conclusion that the people that buried their dead in these caves had different practices, or that some were of greater antiquity than others? That they belonged to the same race is proved by the study of their skulls; but there is so far nothing to show that some of the burials are more ancient than the others, nor do the skulls differ from those of the surviving Hottentots in the manner of those of the Neanderthal and of the Cro-Magnon.

In most cases the caves contained several skeletons; at Coldstream, in the superficial debris received from there, I find remains of nine adults; to all appearance the cave will yield a great many more; twenty are said to have been exhumed. Some, if not most, of these remains from the caves undoubtedly show signs of great age. The vertebræ and ribs especially are as light as if they were made of papier mâché. Many of the bones are hygrometric; most of the relics, bone or shell, are strongly impregnated with salt—a fact which, as Mr. R. Atkinson suggests, may account for their

state of preservation—and all the human remains are extremely brittle.

But in spite of that there is nothing to give us a possible clue to their relative age. These caves and rock-shelters may, and probably have been, resorts of aboriginals until very recently. In a cave-shelter where the bodkin (Cut 4 of Fig. 172, Pl. XXIII.) and the double-pierced nacreous beads (Fig. 187, Pl. XVI.), were discovered together in the Willowmore District, there was also found the small rusty iron blade of what may have been a knife or a spear-head. In the Coldstream cave was found, 2 feet below the surface, a portion of what appears to be the steel striker of a tinder-box, and also a piece of copper, probably a portion of a wreck. These finds are on a par with the piece of Oriental china and brass button at Bloembosch, of the glass beads or clay pipes and brass buttons of European manufacture in the middens of the Cape Flats, &c.

Buried in the sands of Blaauwberg was found the ornamental brass side of a military bridle, together with the skeleton of a Strand Looper. The pattern of this bridle is said to be Dutch. At Hagel Kraal, in the Bredasdorp District, Cape Colony, two tiny brass bangles, 440 mm. in diameter, one round, the other flat, were discovered in the sand-dunes, &c.

These finds point plainly to a continuance of occupation of sites that lasted until, and probably long after, the advent of the colonists.

The lamentable account given by Sparrman, which I quote in the chapter on !kwès, makes it also probable that the wretched Hottentots whom he mentions had taken shelter from their enemies in places difficult of access, as these caves prove to be. These fugitives were provided with !kwès or perforated stones, similar to some found in this cave debris, and also in the neighbourhood of the shelters.

But interesting as these finds prove, they throw no light on the relative age of the men who were cave-dwellers, who manufactured the stone and the bone implements, and who executed the paintings.

Their culture is strikingly like the Magdalenian; but a similarity of culture does not imply a similarity of races nor a similarity of date.

In spite of this proposition, the mode of sepulture of these aborigines, the cave-dwellers especially, have so many points of resemblance with what we know occurs elsewhere that it is permissible to refer to these occurrences for purposes of comparison. In South Africa, whether buried in a sitting position or lying on one side, the position is that of the "child in the womb."

This rite has been observed in many parts of the world, and three causes are assigned to it: symbolic attitude (the dead returning to the bosom of mother earth); greater facility for burying the body in a restricted space, especially when a rough crypt had to be made; and lastly, when ligaments were used—which is not the case in South African sepultures—due to a sense of terror, inspired by the dead, in the survivors.

But one reason which has not, to my knowledge, been adduced to explain this position may be found in that assumed naturally by the Hottentot-Bush aborigines of the present day when sleeping, and especially when ill, and that posture is identical with that of the skeletons. This fact had not escaped the notice of Sparrman. Endeavouring (1775) to induce a young Hottentot to enter his service, he crawled into his hut, and “found him lying under his skin-cloak in the manner of his countrymen which I have already mentioned, the knees drawn to his nose, *as a fœtus in the mother’s womb.*”

It should not necessarily be inferred from the above remarks that this method of sepulture originated with the Hottentot races. Yet it was in common use among the neolithic people of Egypt with whom the Hottentots or “Sans” have undoubtedly come in contact, if they are not of them. It is also observed among some prehistoric European races,* even when the small stone coffins, or “stone cists,” themselves much smaller than the body and making therefore a reduction of length compulsory, had come into vogue.

But whereas the connection of the Hottentot and prehistoric Egyptian is probable, the proposition that the same existed with the Neolithic races that inhabited Central or Southern Europe might seem hazardous, except that the discovery in the “Grimaldi Caves” near Mentone, of a small race with negroid characters, associated with australoid, throws a new light on the possible dispersion of a race which inhabited at all events the shores of the Mediterranean, and possibly also Central Europe—a race that preceded the Cro-Magnon, and that was in turn posterior to the Neanderthal, which, in all likelihood, is the middle pleistocene race of man that occupied part of Europe.

It is interesting to compare with the sepultures of the southern littoral of the Cape the discoveries of the “Grimaldi” cave, with reference to this negroid type of which two skeletons of small size have been found in the lower stratum. One is that of an old

* In Bohemia the Neolithic race that inhabited that country is designed as “people of the tucked skeletons” (Píč Starozíností Země české, i., apud Déchelette).

woman (1 m. 54 cm.); the other of an adolescent from fifteen to seventeen years of age, and both are in the tucked position. A flat stone supported by another at each end protected one of the heads only. A very shallow hole had been dug for the bodies. The young man had a tiara consisting of four rows of the small shell (*Nassa neritæa*), and the old woman bore on the left arm two armlets made of the same kind of shell. A few flint flakes seemed to have been deposited on, or placed alongside, the bodies.

Boule, who has made a special palæontological study of the cave, states that these skeletons belong to a very remote part of the pleistocene.*

The importance of this discovery is perhaps no less great than that of the Chapelle aux Saints, quoted in Chapter II. The identity of this small, Negroid race that seems to have preceded the Cro-Magnon, and is itself posterior to the Neanderthal, rests, it is true, on two skeletons only; but so did at one time the evidence of the Neanderthal-Spy, which several ultimate finds are now corroborating.†

In our sepulchres, however, there is nothing to indicate an age as old as that attributed to the Grimaldi remains by such an experienced man as Boule; but we have the same rite of burial, the same ornaments, the same position of the body, and the negroid character. It is therefore not rash to say that if these Hottentot-Bushmen, which I denominate Strand Loopers, are the survivors of any race, it is with that of Grimaldi that we shall find similarity.

* The bones and also the ornaments were so cemented with the layer that it was necessary to use chisel and hammer to detach them. Verneau was compelled to break the skulls, which had become so compressed laterally that their transverse diameter could not be ascertained, and to restore them afterwards to their primitive shape.

† Hervé and Pittard respectively claim, subsequently to the discovery of the Grimaldi type, to have found characters pertaining to this race in two neolithic skulls from Brittany (two women the dentition of which is singularly like that mentioned by Gaudry as belonging to the Grimaldi fossil man), and two skulls from the Valais Mountains in Switzerland.

CHAPTER XVIII.

IMPLEMENTS OF EUROPEAN NEOLITHIC TYPE.

However much the lance-points found on the Cape Flats may approximate in general appearance and workmanship to similar examples from the Fayoum, there is still the possibility of a doubt as to their not being the work of aborigines, and that doubt is also permissible in the case of the axe with edge ground on both sides which is represented here, observe and reverse (text-fig. 26).

This example, which belongs to the Grahamstown Museum, was found near that city, and has been figured by Dr. Schönland. It is said to be made of green jasper, and is scored by striae resembling those produced by glacial action. It was found alone.

Its presence is not easy of explanation. It is the only example of its kind ever recorded, and there is no doubt whatever that it has been ground intentionally; but its shape and technique are so different from the shape and technique of the South African Lithic industry that one hesitates in attributing the execution to a South African aboriginal. And yet some of them knew how to grind a cutting edge, as exemplified by Cut 11 of Fig. 185 in Pl. XXV., in which the edge is ground on both sides. I know of two similar implements from Knysna, and I have lately received a fourth from another rock shelter containing the same domestic appliances as in Fig. 185, but the edge, although treated in the same manner, is not quite so sharp as in the two specimens mentioned; all three are flat and thin.

Mr. A. L. du Toit, of the Cape Geological Survey, examined at my request the stone axe which Dr. Schönland kindly loaned me, and he reports as follows:—

“The axe is manufactured out of a small, weathered lump of dark-greenish quartzite—the material of which can be matched at many localities on the border of the Karroo. The lump of rock shows on one side the surface which has been exposed

to the air; *i.e.*, it is smooth, brown, and slightly polished. The under surface is lighter in colour, rough, and slightly pitted. The



FIG. 26. $\times \frac{3}{4}$.

lump was subjected to scarcely any trimming, and the edge was then ground. The scratches were made in the operation of grinding, and are most decidedly not of glacial origin. The shape

and scratches of the lump entirely negative the idea that it was a glaciated pebble from the Dwyka."

It is then proved that the implement is made of a local rock ; but this axe-head, or cleaver, is not of the orthodox shape of the European or other Neolithic ; and Mr. du Toit shows that the maker availed himself of the natural contour of the stone. It should be noted also that the *ground* cutting tools I have referred to are pieces of flat, thin slabs selected on account of their shape rather than prepared, and these tools bridge thus to some extent the great difference in technique between trimmed ones and the axe-head here dealt with. Until more examples are known it would be unwise, however, to theorise, much more so that we have evidence, although very restricted, of other tools that approximate still more the Neolithic culture of the palæarctic region, and others.

Cuts 3 and 4 of Figs. 116 and 117 represent stone implements, the presence of which at Harrismith, Orange Free State, cannot be easily accounted for. Worked on both sides as shown in the Figs., they are intentionally pedunculated, and are without doubt intended for arrow-heads. Cut 2 of the same Figs. is a still better finished piece. It was found also in the Orange Free State, in the valley of Reit Spruit, District Caledon, among South African-type pygmy scrapers, one of which is figured in Cut 1 ; and it reminds one, as justly remarked by Professor Henry Balfour, of the arrow-heads found in Tunis.

The material of which these three arrow-heads are made is of *local* origin, in the same manner as the ground axe. They belong to the Bloemfontein Museum.

These three relics stand alone, and an explanation of their presence would be merely speculative.

CHAPTER XIX.

NOTES ON SOURCES OF ROCK FOR THE MANUFACTURE OF STONE
IMPLEMENTS.

By A. L. DU TOIT, of the Cape Geological Survey.

The distribution of the implements is in a number of cases closely connected with certain geological horizons and outcrops of rocks. In many cases, where there was no suitable rock close at hand, their makers must have travelled specially, but small distances, usually, however, to obtain suitable material for the manufacture of implements.

For example, in the Western and Southern (Ceres and Tanqua) Karroo the hard chert band at the top of the Dwyka shales has been the most important source, and all along its outcrop—especially at Beuke's Fontein—there are numerous flakes and implements, while artefacts of this light grey chert have been carried many miles to the N.E. into the Roggeveld and Klein Roggeveld. In this case the rock chosen is extremely suitable for the purpose; moreover, until one comes right up to the edge of the Roggeveld there is no other material available, for the lydianite, so commonly used, is only found accompanying the Karroo dolerites (here appearing in the escarpment near Sunderland).

This material was also carried into the mountains of the Cold Bokkeveld.

In the north of Cape Colony, owing to the variety of the formation, there was perhaps more choice; but sometimes the material was not quite suitable for working. Around Plessis Kop, &c. (N. of Vryburg), in a flat area of amygdaloidal diabase, the small implements are made of bits of agate (weathered out of these volcanic rocks), while many are made of white quartz obtainable a little to the north. The larger implements are of diabase. In northern Mafeking and Vryburg, where there is much sand, the

only hard rock is a silicified superficial material (surface quartzite), and the implements are of the harder, finer-grained, and more translucent portions of this recent deposit, as near the Victoria Falls. Around Barkly West the large implements, such as occur in the gravels, are of diabase, and many of them have probably been (or else could have been) made almost *in situ*. Small ones are, again, of agate or quartzite (from Dwyka boulders or from the Vaal River gravels). Now and then one comes across a flake of chert obtained from the Kaap Plateau, or of brown jasper from the Asbestos Mountains, for these two materials are eminently suited for implement manufacture. Indeed, such yellow jasper implements (small size) have been found away from Prieska and Griqua Town, close to Hope Town, Potfontein, Britstown, Vosburg, &c., whither they must have been carried.

On stepping off the diabase on to the Dwyka conglomerate and shale, the material of the implements changes, though now and then one of diabase is found miles away from any outcrops, *e.g.*, one near Secretaris (between Kimberley and Schmidt's Drift). Around every hill of dolerite are found implements made of black lydianite formed through the alteration of the Dwyka shales by the igneous intrusion; they are especially numerous near Wolve Dam, W. of Kimberley, but are abundant all along the first dolerite escarpment from Warrenton to beyond Van Wyk's Vlei.

Implements of lydianite occur also to the N.W., but whether they have been carried there or made from pebbles obtained from the gravels of the Orange, Brak, Reit, and other rivers cannot be decided.

In Prieska and Kenhardt, upon reaching the granite area, the latter rock only furnishes white quartz, which is not very suitable for working; hence the natives appear to have travelled southwards to the outcrop of the Dwyka conglomerate, where there is an infinite variety of material to choose from. The northern edge of the Dwyka, all along the Kaaien Butt, is a good locality for implements, which are mostly made of quartzite or of jasper (from the Griqua Town series). These implements are found in an area which, though waterless, is characterised by small "pans," and, as far as I have been able to judge, there appear to be no spots which have been untraversed by the natives, for implements can be picked up even in the driest and most uninhabitable parts of the districts.

Where the Kheis quartzites crop out, the implements are by preference made of that rock, and around Prieska and Griqua Town on the belt of brown jaspers) of the local material.

CHAPTER XX.

STONE AND IRON AGES COMBINED.

That many of the aboriginal clans or tribes of the Hottentot, or "San" race, knew and practised the use of iron before Europeans came into contact with them, especially along the littoral, there can be no doubt; but that this iron industry had little penetrated the inland districts would seem to be also proved by the evidence which I have endeavoured to piece together. Along the coastal belt, however, the evidence of the contemporaneous use of stone and iron is unmistakable.

In the account of the wreck of the *Sao Gonçalo* in Plettenberg Bay (Baia Formosa, as it was then called) in 1629,* we read that the natives met there by the shipwrecked people exchanged oxen and sheep for iron; we read also that the natives were armed with spears (assagais) and bows. Had these implements been tipped with stone this peculiarity would probably not have escaped the notice of the narrator. From the account given of these natives and their habits it is plain that they were Hottentots.

And if we turn to the old Cape chroniclers, we have evidence of the fact that the smelting of iron, perhaps also of copper, was known and practised by the people of that race, but that they had still retained the use of stone tools.

Thus Kolben, speaking of the Hottentot artificers: "Smithery as it stands among the Hottentots requires a great deal of labour and a great deal of ingenuity. For the melting of iron from the ore is comprehended in it, and, what is much worse, it is furnished with no other implements than stone. . . . As soon as the receiver is cold they take it out, and break it to pieces with stones. The pieces the Hottentots as they have occasion heat in other fires, and with

* Trans. S. Afr. Philos. Soc., xi., 1902, p. 197.

stones beat them out and shape them to weapons. *They rarely make anything else of iron.*"

Vogel ("A Ten Years' Journey to the Eastern Indies"), quoted by Kolben, makes the following statement: "They get the hardest stone they can, and putting the iron upon it, as upon an anvil, *beat it with a rounded stone which serves for a hammer,*" &c.

I am able to corroborate Kolben's statement by finds made on the floor of temporarily removed sand-dunes in the Cape Peninsula. Here, are occasionally found small cairns of greyish-black stones, the object of which remained for a long time conjectural. That they were not sepultures deep digging had proved. Were they, then, merely the heaps of stones alleged to be one of the many graves of the ubiquitous sorcerer, "Heitse Eibip," to which any Hottentot who passes adds another for luck? All the stones were calcined limestone. The revelation came at last in the find, alongside one of these cairns, of pounders heavier than usual, with ends greatly abraded; of mortars, with the usual central depression, broken across; of !kwé's cleft in halves, showing that they had served as hammers—the *rounded stone* of Vogel's account probably; and, lastly, of pieces of iron ore of very poor quality. That the site had been that of a smithy was thus clearly established. But on this very site were found also minute ostrich egg-shell beads and tiny stone borers or drills; the usual Cape Flats type of small scraper knives; brass buttons—an article of trade mentioned by Kolben; bowls of small, white clay pipes with the stem broken close; occasionally a leaden bullet; and also, but rarely, small beads of European manufacture.

Some of these finds show that the antiquity of these smithies is not great, but it proves conclusively that the stone and iron industry existed side by side until recently.

Kolben's statement that the Hottentot rarely makes anything else of iron except his weapons seems to me to be the true explanation of the survival of the stone industry. The material is difficult to procure, difficult also to shape in the manner required, and the more primitive method proves of great help in the new line of progress.

So far, however, I have dealt only with the South African neolithic stone industry in connection with the Hottentot race. Is there no other that is also connected with it? and what of the Bantu-speaking people whom we here call Kaffirs: the Bechuana, Barotse, Basuto, Bakalanga, Xosa, Zulu, Ova-Herero, and Ovampo, not ignoring the Berg-Damara?

Traditions as well as speculation have it that they are compara-

tively late immigrants. But who can say that they did not occupy afresh territories that they inhabited in former years?

Like the Hottentot race, they are of pastoral habits, but, unlike the former, they are also agriculturists, which the Hottentots and his ascendants have seemingly never been.

Of the use of iron these Bantu-speaking "Kaffirs" are cognisant, and yet among some of them this commodity is sufficiently scarce for women of the Xosa and Pondomise tribes to use, until quite lately, wooden hoes—hoes of a shape that is paddle-like, a shape that suggests survival also: the paddle used for propelling canoes on Central African lakes.

But are the Kaffirs belonging to the tribes mentioned acquainted also with the use of stone implements? Yes, they are; especially when hammers or grinding tools, such as querns and hand mullers, are required.

The Kaffir woman of to-day often spends many months in fashioning out the hollow of a stone mortar to a particular curve by beating with stones held in the hand. I quote here Gooch: * "Dr. Sutherland, of Natal, once watching the slow process made by an old Kaffir woman at a kraal where he had passed the night, sought to teach her the much more rapid progress which an iron-pointed tool would make, and, by a few blows on the stone she was working, expected to have earned her gratitude, but was only met by indignation, as she vowed the stone was spoilt by him, and, despite his arguments and explanations, ruefully returned to her work, and sought to eradicate the damage he had done."

In Basutoland, and especially in Southern Rhodesia, we find occasionally mullers fitting these querns, but they are tools which have undergone a thorough preparation for the purpose; that is to say, they have been smoothed in such a way as to fit exactly the cavity of the quern. This quern so made, and the posture assumed of necessity by the worker for its manipulation, would resemble almost exactly that represented by an Egyptian statuette of Dachehour, of the Third Dynasty.†

And there lies the difference between the quern attributable to Kaffir industry and that of the Hottentot. While in the case of the former it has been worked *ab initio* for a well-thought, specific purpose, in the latter it is continued use only that has produced the groove or depression in the mortar and the corresponding smoothness of the muller. If one of these mullers or pounders is found

* "The Stone Age of South Africa," Journ. Anthr. Inst., 1881, p. 143.

† De Morgan, "Les origines de l'Egypte," i., p. 144, fig. 325.

polished by grinding, and is either conical or affecting a non-primitive shape (and this occurs occasionally), it is safe to assume that it is a primitive pounder that has been re-shaped or improved upon by a Kaffir.

The stone implements alluded to as being attributable to Kaffir industry have a facies of their own, a facies so different from that of the South African palæolithic and neolithic series, that a confusion between them seems impossible.

The latter are artefacts produced in a tentative way, that became crystallised after having made very little progress.

The former is an adaptation, or rather conservance, of ancient methods, perfected owing to the scarcity of, or difficulty in, procuring, the material, the superior value of which was fully known.

In Southern Rhodesia as well as in parts of the Transvaal (Lydenburg and Waterberg Districts) there are found not uncommonly stones that show plainly that they have been used for a purpose.

When discovered along the edges of ancient workings from which gold or other metal was obtained, it is claimed for them that they are, on account of their partial wear, the pounders used for extracting from the matrix, before smelting, the smallest particle of mineral.

That such stones have been used for the purpose above mentioned is most probable ; that they were all used in the manner alleged is not a fact.

The Museum has lately received three stones of a size suited for hand use. They were found in the Lydenburg District (Transvaal). They are roughly worked into facets, most of which have in the centre a moderately deep, smooth hole. The smoothness of the latter, added to the find of the stones near supposed old mines or ancient workings, led to the belief that they were hand hammers used for driving drills. In order, however, to explain the smoothness of the hole, the conclusion arrived at is that drills made of wood had been utilised !

Drilling has nothing to do with the presence of these smooth holes, the object of which is either a modification of, or perhaps an accessory to, the "fuba stones" mentioned by Randall-Maciver in "Mediæval Rhodesia," 1906, pl. xiv., &c. "Some of these stones have been worked into a rectangular series of holes, evidently for playing 'Fuba,' which is a well-known game among the natives of the present day," *loc. cit.*

Von Luschan has published in vol. xxxviii. of the Zeitsch. f. Ethnol., 1906, a photograph of two Zambesi natives playing

this "fuba" game—"a game well known from Egypt to the Limpopo"—in small holes made in the ground.

I have photographs, presented by Mr. A. H. Exton, of two "fuba stones" with ten and eight holes respectively. They were discovered in Mudza-Macequeze, not far from Umtali, whence Dr. Randall-Maciver's specimens came. Having been found near an alleged old mine—old workings they are called—they were ascribed to Phœnician workmanship.

Near to, or together with, these "fuba stones" other relics were found in the shape of alleged copper, if not gold, castings, which, however, on examination here, proved to be the clay nozzles of the African natives' bellows filled with iron slag.

It is not, therefore, too much to ask the reader to picture to himself, without too great a stretch of imagination, the native smiths or miners of the period indulging in a game of "fuba" after, or perhaps during, their spell of work.

Yet the origin of these "fuba stones" and the game connected with them appears to be of great antiquity. It is quite within the range of probability that a connection will be proved between these cupuliform holes and the "cups," "crescets," "cups and rings," "schalen" or "napfchen," "pierres à écuclles," or "pierres à cupules," &c., known to occur in the British Isles, Denmark, Sweden, Germany, France, Spain, Corsica, Northern Italy, even in India. In Europe these "cups and rings" are usually connected with the bronze period,* but their object, or *raison d'être*, has never been satisfactorily explained. I may add that in Europe these more or less rectangular series of cupuliform holes have often additional concentric circles, or are often connected with each other by grooves. It is alleged by one of my correspondents that in one of the "fubas" found in Macequeze were cut lines uniting various holes and also others on the sides, directed to the holes.

But the mortars or querns, hammers, pounders or "fubas" used still by Kaffirs have, in all likelihood, no connection with the palæolithic or neolithic ages as revealed in South Africa, and even Africa. They merely prove that people were then familiar with the use of metals yet resorted to stone when occasion arose or demanded it.

It is claimed, however, although on slender evidence, that Kaffirs used lately, and thus presumably manufactured, rude stone imple-

* On the West Coast of Africa "fubas" made of bronze are known from Benin. I saw lately a wooden fuba board from Katanga, North-Western Rhodesia, used by the natives for playing two kinds of game.

ments in the shape of flakes. It is therefore necessary to consider this proposition.

I have in previous chapters mentioned the implements of palæolithic and neolithic types, found so profusely not only in Cape Colony, but also in Southern Rhodesia, a locality still occupied by a Bantu-speaking race, which, whether autochthonous or not, has seemingly been there for a considerable number of years. It thus becomes the purport of this paper to find if these Kaffirs—Bakalanga, Bechuana, or Barotse if not Basuto, or under whatever name they went, or what real tribe or nation they belonged to—had at one commensurable time the stone industry, or if they have retained it.

The answer is, on the whole, negative, in spite of some superficial discrepancies, which can be easily accounted for by contact.

During his excavations among the ruins of Rhodesia, Randall-Maciver never came across palæoliths that could be said to have been lying pell-mell in the debris, or kitchen-middens, with the copper and iron relics which are of so purely an African type. When he came across some "Celts" he found that they were "lying on the surface." "None of them can be said to have come from an actually buried deposit, but two were picked on the top surface of an ash deposit." The reader may, however, dismiss at once from his mind the idea that these two examples were palæoliths. The contrary conclusion is proved by the figures of these stone implements ($\frac{1}{4}$ of the size), and also by their description.*

Thus we read in the finds at Khami: "In various places on the surface we picked up poorly-worked stone implements. Sometimes these were on the actual floors of the huts."

Ibid.—"In the great kitchen-midden of Dhlo-Dhlo were found stone implements, generally poorly worked." Fortunately these implements, both from Dhlo-Dhlo and the Niekerk ruins, are figured. They are of the same type and workmanship as those occurring in the cave-shelters of the Matopos (Pl. XVII., Fig. 133), where their connection with the Bush people is indubitably proved by surviving parietal paintings;† and were it necessary to have other proof that it is with the culture of the Bush people that these small stone implements are to be connected, the presence of

* The palæolithic implements mentioned and figured in Pl. XII. of the same work were found by Mr. Kenny, and have no connection whatever with the excavations. They have been already alluded to in a previous chapter.

† These paintings are being profusely discovered now all over Southern Rhodesia from Buluwayo to the Chibi and Sabi River, and other parts.

ostrich egg-shell beads—this typical produce of the industry of the Bushman—which Randall-Maciver found in the same spot and figured in his work, would afford it.

No other conclusion is possible, except that the sites mentioned have, at one time or other, been occupied by Bush people.

But Professor Henry Balfour is satisfied (see *Man.*, February, 1906) that the lines and cross hatchings *in intaglio*, on some of the painted pottery from Dhlo-Dhlo and Khami, were produced, after the clay had already been baked, by means of agate or hard silicious stone flakes which are found profusely with the potsherds.

The coloured figures of the Dhlo-Dhlo painted pottery in Randall-Maciver's work show certainly the intaglios in white over a black ground; but is it quite so in the original?

I have not seen any painted sherds from either Dhlo-Dhlo or Khami. All those we possess from Southern Rhodesia are in monochrome.

But we have a fairly comprehensive series of Bechuana pots or vases in polychrome, and they have the very same style of decoration and intaglio designs. Yet I am sorry to say that after a most careful examination I am not satisfied that the incised lines, except possibly the very thin, shallow ones, were produced by chips of the kind found in Southern Rhodesia or elsewhere.

These flakes are always more convex on one side of the edge than on the other, and the incision produced by such tools must of necessity be more slanting on one side. This is *not* the case with our pottery. When the lines are moderately broad, and this occurs often, the always shallow furrow is of even width and depth. Moreover, these incisions in what is painted pottery must have been made after a preliminary baking, not when they had reached the full-baked stage and its corresponding hardness.* This is proved by the lines which limit the painted squares or triangles. These lines were cut before the colour was applied, and ultimately fixed by supplementary baking. Yet, in spite of the reasons militating against the use of stone flakes for pottery decoration, Professor Balfour's contention receives, perhaps, support from Dr. Schönland's testimony.

In his narrative of "A Trip to the N.E. Kalahari" † he says:

* An extremely hard material, such as agate or other hard siliceous substance, is not, therefore, indispensable for cutting the decorative pattern. Any iron tool would suffice, and it was procurable, because the makers of that pottery—certainly not Bush people—were perfectly familiar with, if not expert in, the use of iron and other metals.

† *Rep. S. Afric. Ass. Adv. Sc.*, 1904.

“ Dr. Greathead happened to come across two ancient Bamangwato settlements (Bechuanaland). On the site of these two settlements we found innumerable bits of pottery of the same type as the pottery made to this day,* large numbers of stone implements, especially scraper-knives, and I happened to find a small stone bead which is of the same type as the digging stones of the Bushmen, with double bell-shaped perforations. Khama (the chief) told me expressly that his people used to make such beads, otherwise I would have ascribed it to Bushmen.”

Contact with Bush people, especially that come to by the Baka-lahadi—serfs of the Bechuanas, although belonging to the same race—could account for the presence of the stone scrapers or knives and the perforation of the stone bead.

It is thus quite possible that the pottery-makers of Khami or Dhlo-Dhlo did also acquire, and in certain localities retained from their contact with the small yellow man, the traditional use of stone chips for incising on the pottery they made by hand their essentially own geometrical figures. Moreover, it cannot be claimed for these decorated sherds that they are old.

On Randall-Maciver's own showing neither the “huts” and their floors, nor, for that matter, the Rhodesian ruins, are more than mediæval. Any ethnologist who takes the trouble to compare the iron relics found there with those obtaining wholly or still partly among the Bechuanas, cannot but be struck with the identity in shape and purpose. When I pointed out this similarity at the time of Bent's discoveries I was laughed to scorn. Things have changed since.

That this influence of contact is not imaginary is corroborated by the fact that the few surviving Bush people † found among the great agglomeration of Kaffirs in the eastern part of the Cape Province are soothsayers and rain doctors. The Bantu-speaking natives implicitly believe in and propitiate them when occasion arises.

Europeans and other civilised races, with their traditions of “pixies,” goblins, gnomes, djins, &c., should not gird too freely at the superstitious Kaffir.

The folk-lore of the Kaffir is not very rich, and poor indeed is that of the Hottentot and of the Damara. But among the published tables that I have so far come across there is one only in which mention is

* Painted pottery is very seldom produced now, but incised designs of the usual punching, herring-bone, and chevron patterns still subsist. Unfortunately Dr. Schönland does not specify either the style or the decoration.

† I believe that the last male member of that race died last year (1909).

made of what may have been a stone implement. It is the story in the O'Tyiherero, or Damara language, of the "Unreasonable Child to whom the Dog gave its desert." *

We read: ". . . Her father gave her the axe. Going further she met the lads who were in charge of the cattle. They were busy taking out honey; and in order to get at it they were obliged to cut down the trees *with stones*. She addressed them: Our sons, how is it that you use stones in order to get at the honey? Why do you not say, 'Our first-born give us the axe?'" &c. . . .

It must, however, not be forgotten that the Damaras were probably for considerable times in contact with the Bush people. In fact, the language of the Berg-Damaras is no longer Bantu, but Hottentot. The Damaras and their northern neighbours, the Ovampos, are skilful smiths both in iron and copper, and it is not too much to say that it is this sense of superiority † that emphasises in the tale the foolishness of the boys proceeding to cut down a tree by means of stone tools.

Whether the Bantu-speaking races originated in Equatorial Africa, in the region of the Lakes, as it is claimed for them, or whether they migrated there from India or elsewhere, ‡ they are so ancient that they must have lived at some time or another in the Stone Ages. Yet, besides the few instances which I have given of the use of stone as a material, there is little or no evidence to show that the South African Kaffirs were the makers of the palæoliths or of the neoliths, large or small, which abound in South Africa, and which, judging from the finds made hitherto, are probably as equally abundant from beyond the Zambesi to the northern parts of the Congo, as they are in Nigeria, Mauritania, Somaliland, &c., not to mention the valley of the Nile.

It cannot be said that the Bantu-speaking negro is still partly in the Stone Age. But such a proposition cannot be advanced in regard to the South African representative of the San, as my account of the occurrence of the stone industry proves, I submit, without shadow of doubt.

* Bleek's "Reynard the Fox in South Africa," London, 1864.

† Von Luschan is of opinion that the manufacture of iron originated with the African negro, who transmitted the process to Egypt, whence it passed to Asia Minor, and from there to Northern Europe (*Eisentechnik in Afrika: Zeits. f. Ethnol.*, xli., 1909).

‡ The Ariahs had to contend in India against the black Daysus that lived in the mountains, and the yellow Daysus, probably Mongols, that occupied the plains.

CHAPTER XXI.

THE ORIGIN OF THE BUSHMAN OR HOTTENTOT.

Now that it may be taken for granted that a branch of the San race was in South Africa connected with the neolithic stone industry, and, as will be seen hereafter also in all likelihood with the palæolithic type of the same, it would indeed be highly desirable to know where these races or sub-races, which were represented here by the Strand Looper, the Bushman, and the Hottentot, originated.

From the point of view of ethnology, however, the research remains very speculative—too much so, in fact.

The complexion, size, and physical peculiarities of these people prove that they do not belong to the Bantu-speaking negro tribes (Sudanese of Von Luschan), extending now in Africa from the south to a few degrees north of the Equator, or perhaps further, adjoining the Galla country on the north-east and reaching the Niger on the north-west.

Yet the Bush San is an ally of the negro; he belongs to a negroid race.

THE LANGUAGE.

The language of the Bushman is unique. That of the Hottentot branch is undoubtedly in many respects analogous to it. Both contain the same strange clicks, which are really consonants.

According to Meinhof: "They also join roots of words in such a way as is considered to be characteristic of those languages which are called 'isolating languages,' *e.g.*, Chinese, to which the Sudan languages seem to belong. . . . This striking resemblance cannot be accidental; it points conclusively to the fact, which could otherwise hardly be contested, that the Bushman and Hottentot languages have during a long time influenced each other."

* "The Language of the Hottentots," Rep. S. Afric. Ass. Adv. Sc., 1905, vol. iii.

But, in addition, this Bush-Hottentot language has influenced that of the Bantu-speaking negroes of South Africa,* and this fact implies a very long intercourse of the two races, unless they were at one time the same.

Of a still longer duration must have been this intercourse with the Berg Damara, a Kaffir, degraded no doubt, yet retaining still the physical characteristics of his race. His language, however, is no longer Bantu, but Nama, *i.e.*, Hottentot.

According to Meinhof and Von Luschan the clicks have come from the Bushmen to the Hottentots, and passed on through the latter to the Kaffirs.

Yet clicks are also used by several tribes living now to the north of the territories where the Bantu language prevails, namely, in German East Africa among the Wascendau; in British Africa among the Watwas. The Angonis, a Zulu tribe of East Africa, are said to have brought clicks from South Africa.

The presence of these typical clicks in the language of the people aforesaid leads Meinhof to assume with what he calls "some justification" that those South African languages (Bushman as well as Hottentot) had possible relations in olden times to the north of the region of the Bantu idioms.

Beyond, however, showing intercourse between races differing in several characters, philology does not help in proving or disproving, as the case may be, the antiquity of the language of the San, and thereby of the race.

We have in South Africa the so-called Bushman with, it is alleged, seven or more clicks; the Nama, or Hottentot, with four; the Kaffir with two.

If complexity in a language were a proof of antiquity certainly the Bushman might be safely considered to be an older race than the Sudanese, and also the Hottentot. But is not this very complexity due to isolation? What we know of the Bush dialects would seem to bear out this assumption.

Having to subsist mostly on the produce of the chase, or eke out a precarious living from the veld, unable therefore to live in large communities, his language would, of necessity, become a complicated dialect. It is not too much to assume that through this very isolation some of the clicks of one clan were lost, others

* There are only two clicks in Kaffir, four in Hottentot, and seven or more in Bushman. Kaffir employs clicks only before a vowel; Nama also before *n*, *k*, and *x*. Bushman before all consonants, and even before all other clicks" (Von Luschan, "The Racial Affinities of the Hottentots," Rep. S. Afr. Ass. Adv. Sc. 1905, vol. iii.).

invented. This assumption is, moreover, borne out by facts. Thus, among the few colonial aborigines left who still use the Bush language, some cannot understand their very neighbours, or they do so to a limited degree, owing to certain "clicks" having significances that they do not understand, or perhaps cannot acquire.

The number of these clicks is also variable. A lady, brought up among the Hottentots, tells me that the Bush people of South-West Africa (German South-West) have *one* click only more than the Hottentots. Miss D. Bleek informs me that she met in Griqualand West (Cape Colony) with people using a click the meaning of which she is not only non-cognisant herself, but which is also not understood by people of the same race living in the vicinity.

It is on record that some thirty or forty years back the Bush people from what are now the districts of Calvinia and Carnarvon, in the Cape Colony, could not understand their congeners from the Stormberg, Cape Colony, or from parts of the Orange Free State. If we proceed further north we find the same conditions obtaining now in the Kalahari region among the Ba-sarwas, some clans of which live only a few miles apart.

The present mode of life of this race compels isolation. Isolation must of necessity affect speech,* and that speech is thus affected is sufficiently shown by the examples given.

The presence of more numerous clicks cannot therefore justify the conclusion that because there are seven or more in the Bush and four only in the Hottentot dialects, the former race is necessarily older, more autochthonous, or had remained more homogeneous than the latter, a race, moreover, which although nomadic, lived in communities, and would on that account retain the traditions of its language.†

But if, putting aside the question, Which of these two languages

* Rev. R. Moffat remarks on the Balala, serfs of the Bechuanas, who, once inhabitants of towns, have been appointed to live in the desert, are singularly corroborative of this assumption. "They are never permitted to keep cattle, and are exposed to the caprice, cupidity, and tyranny of the town lords. They live an hungry life, much as the Bush people do. . . . The dialects of the Sechuana, as spoken by these people, are now so different from that spoken by the nation generally that interpreters are frequently required" ("Missionary Labours," London, 1844).

† It should not be forgotten that there is nothing to prove that all the Hottentot tribes spoke a language similar to, or having the same number of clicks as the surviving "Nama," or nearly extinct Koranna. The first colonists noticed that one of the nations—the Saldanahs, I believe—had less clicks than the others. Unfortunately I cannot again find my authority for this statement.

as now left is the more ancient? we assume that the dialects of, let us say, the Algonquin or the Berber, the Semang or the Aryan, the Bantu or the Semitic are the speech of people who had, by living in common, learnt to modulate their cries into speech, and had thus formed glossological groups totally independent of each other (E. Reclus), then it must be admitted that the language of the Bush-Hottentot developed into a group probably more distinct than any other. And as culture must perforce affect language, the primitiveness of that of the Hottentot-Bush races leads us to the conclusion that it is not due to degeneration or retrogression, but that the culture, as shown by their relics, and their language have kept on a par; and this conclusion postulates a very great antiquity.

DISTRIBUTION.

In their homalographic scheme of the distribution of the Pygmy races, including the Negritoës of Asia, Negrilloës of Africa, and the alleged Pygmies (*Pygmées discutés*), Schlichter, Deniker, and others, locate in British East Africa the Dogbo, Arengo, &c.—who may possibly be only a cross of the San. The South African Mossaro (Masarwa) is found in the desert region of the Kalahari, and the San Bushman and Hottentot to the north of the Orange River. Northward, in Morocco, is an unnamed race. In Mentone (Monaco) and Schweizersbild (Switzerland) have been found human remains of these alleged Pygmies.* Lastly, near the confluence of the Tigris and the Euphrates, in the Persian Gulf, are the Limbans; and in the southern part of Madagascar the Kimo may perhaps be included in the distribution of this ethnic group.

Traditions, however, throw no light on the story of these members of an alleged Pygmy race. What Herodotus, Pliny, or Pomponius Mela relate of them may apply to the San, but it is as likely as not that it applied to the Akka and other diminutive African Negrilloës, now almost restricted to the Ituri Forest of the Congo State.†

We may, however, find a clue to the presence of the Sans either in Arabia or in Somaliland in the account of the famous Egyptian expedition of fine vessels to the kingdom of Punt under the reign of Queen Hatschepset (1533 B.C.).

* But in the first-mentioned place the skulls have a strong Australian affinity.

† Appellations often misapply. Thus A. H. Sayce's discovery from Egyptian hieroglyphs that certain aboriginals of a certain district to the south-east of Egypt bore the name of Trogodytes is a case in point. With the Greeks that word became Troglodytes, *i.e.*, inhabitants of caverns. As a matter of fact, subterranean abodes, including now monolithic churches, are far from uncommon in parts of Abyssinia, but they seem to have no connection with the abodes or refuges of early primitive people.

This queen planned, and had carried out, the expedition to Punt,* the principal incidents of which are depicted on the walls of her temple at Der-al-Bahuri.

There is seen the representation of the King and Queen of Punt and their sons and daughter bringing gifts of the produce of the land to the envoy of Hatschepset (ap. Budge).

It is the figure of the queen "wearing a single yellow garment," the line drawing not hiding the contour, which leads to this digression about the land of Punt.

The figure is most evidently steatopygic, like the Bush-Hottentot race. The daughter appears also to be, in spite of her youth, inclined to embonpoint. The hairs of the lady are comparatively long, but it must not be forgotten that the fresco is in accordance with Egyptian tenets of the art of that period. †

Grotesque indeed must have appeared the figure of the Queen of Punt to the Egyptian envoy, whose idea of beauty was probably the tall, slender type of the ladies of quality of his own nation, as represented in paintings or other reproductions of the period.

Although it cannot be asserted that the San Bushman or the Hottentot was the autochthonous race of Egypt, it is in the ruins of the city of San (the ancient Tanis) that were found the busts of the Hyksos kings, the types of which exhibit essentially Mongolian characters. Sā is the name given to the Bush people by the Hottentots who call themselves Khoi-Khoi; and it is the "Son-qua" of the Cape Records (T. Hahn.).

That the Bush-Hottentot races should have resulted from this

* At one time the people of Habasat, known under the name of Pwent or Punt, occupied the district of Southern Arabia now called Dhofar. They traded with myrrh and incense, which they exchanged on the Somali coast, and perhaps on the high plateaux of Abyssinia. Periodic migration, followed possibly by true invasion, ensued, but eventually the mountainous region of Adowa became the new country of the Habasat. This is said to be the origin of the name Abyssinia. The identity of the name both in Arabia and Abyssinia itself is amply demonstrated by inscriptions found on both sides of the Red Sea (E. Reclus). But it is with the country of Punt that we are actually concerned, because the Egyptians seem to have given that name to a portion of the coast on each side of the southern part of the Red Sea, which they also called "Ta Meter," the divine land.

† These names may have, and most probably did, include a portion of Somaliland, which in fine weather the Egyptian sailors would have no difficulty in reaching. In any case, we know that the Egyptians went to Punt for gums and spices" (Budge).

† The curly frizzle of the head of a negro from Nubia, in a painting dating from about the fiftieth year of Thothmes III. (1580 B.C.), is so conventional as to resemble a longitudinally plaited, saucer-like head-covering.

Mongolian invasion may not be impossible ethnically,* and the affinity of the language with the Chinese—small adjunct, however, as it may prove to be—may strengthen this assumption.†

Yet the predynastic Egyptian is not a San, in spite of certain similarity in culture. He is supposed to have belonged to a white or light-skinned race with black hair.‡

Von Luschan is of the opinion that the Hottentot is a cross between a Hamitic race and the Bushman. "Hottentots have by intermarriage with Bushmen lost a good deal of the high stature and of the great cubic capacity of the skull common to all other Hamitic tribes, and they have acquired in the same way their spiral-curved hair and their steatopygia. . . . Hottentots are herdsmen to our days just as they and all their Hamitic brothers have been for many years."

This opinion presupposes that the Bushman was the autochthonous race of the part of Africa where the Hamite came into contact with him.§ But where were then the Negro or Bantu-speaking races, which, some will have it, have originated in the region of the great African lakes, and are there still. Whence were acquired the negroid characters of the Bush people, coupled with their strongly Mongolian type of face?

But if the commingling of two races is the origin of the Hottentot, then the Bushman race has been the one that imparted to the other most of its physical characters, because late researches point to the fact that physical differences do not exist, or are unimportant in the so-called Bush or Hottentot survivors.

On the other hand, there was another section of the San, the Strand Looper, of whom it is true very little is known hitherto. But physically this section differs a great deal from the Hottentot and Bush people, and it is not improbable that eventually the Strand Loopers, who occupied the rock-shelters of the littoral in the George, Knysna, and Humansdorp Districts of the Cape Colony, will be accepted as, if not the original autochthonous race of South Africa or Africa, at least one that made and used palæoliths, but

* According to De Quatrefages the horizontal cephalic index of the San is almost exactly the same as that of the Southern Chinese. For the San the index is 77·45, and for the Chinese 77·22. Among the Khoi-Khom or the Hottentots the index is lower.

† The aborigines of the inland district were called "Chinese Hottentots" by the early colonists.

‡ The hair found on predynastic bodies is fair, but Virchow declares that this light colour is due to the action of the soil; this conclusion is now generally accepted.

§ R. Biasutti, in his attempt at determining the origin of the ancient Egyptians, finds, in addition to three others, a type characterised by what he terms a *norma verticalis beloides*. These skulls are mostly mesaticephalic. This type, to which

gradually drifted out of this industry into the bone or neolithic manufacture represented by the !kwés, mullers, small scrapers, and the like.

PHYSICAL CHARACTERS.

It is well-nigh impossible to distinguish now from outer appearance a so-called Colonial Bushman from a native of Hottentot origin. Personally I have given up the attempt. Von Luschan admits also that during his visit in South Africa he was greatly puzzled to decide if a given individual was a Bushman or a Hottentot. "Some were claimed to be Hottentots by local residents with the same ardour with which others assured me that they were real and thoroughbred Bushmen."* He suggests that only the language could finally decide the question.

The suggestion, if followed, would not prove at all conclusive, because a Bush child may have been brought up among Hottentots, and vice versa; and it must be remembered that the very difficulty in deciding now between these two closely related ethnic groups is caused by natural intercourse.

This contention is more than supported by the study of physical characters. Our collection of skulls and skeletons of the Hottentots and Bush people was submitted to Dr. F. C. Shruballs, who has dealt with them at length. Not only did he base his conclusions on our own material, but also on all, or nearly all, that obtainable in Great Britain.

In his report † he approaches the subject as follows:—

"The earliest remains of the Bushmen peoples of South Africa would appear to be those of the Strandloopers found in the caves of the south-eastern seaboard. On cultural grounds they are said to be of a somewhat different type to the inland Bushmen of the present day. It becomes, therefore, a matter of some interest to compare the features of the two.

"The averages are compared with those obtained from surrounding races. The purity of each stock is then tested, and it will be shown that the Strandloopers are more homogeneous than the other Bushmen. The Hottentots are then dealt with, and shown to be intermediate in characters between the Strandloopers or primitive Bushmen and the Bantu tribe. It appears that if the Hottentots

9 per cent. of the Egyptian skulls he examined belong, he finds of common occurrence in the Bush race, and for this reason he applies the term "boschmanoid" to this Egyptian type ("Archiv. p. Anthropol. e. Ethnol.," vol. 38, 1908).

* Rep. S. Afric. Ass. Adv. Sc., 3, 1905, p. 118.

† Ann. S. Afric. Museum, vol. v., 1907.

are a cross between these two races the intermingling must have taken place a long time ago, as the Hottentots' skulls form a very homogeneous series. The Bushmen and Hottentots are then compared with the Pygmies of Central Africa, whom in many respects they resemble, and with the populace of Egypt, with whom it has been thought they might have come in contact."

The conclusions Shrubbsall arrives at may be summarised as follows:—

1. "Hottentots are intermediate in all respects between the Bushmen and the Bantu-speaking peoples, while the Strandloopers are further removed from these than the other Bushmen."

2. "The cranial capacity of Strandloopers (7) is 1,345 cm., of Bushmen (24) 1,285 cm. Previous observations had given the capacity of the skull of the male Bushman at 1·330 cm., of the female at 1·255 cm. The range of variation in the Strandlooper is from 1·185 c.c. to 1·515 c.c., and in the Bushmen 1·060 c.c. to 1·570 c.c. With these may be compared: Hottentot 1·365 c.c., Eastern Bantu 1·520 c.c., Western Bantu 1·420 c.c."

3. "From this (a given table) it would appear that the Strandloopers are a less variable group than the skulls collected under the general title of Bushmen. . . . On the other hand, it is far less easy to separate the skulls of a mixed group of Hottentots and natives of Nyassaland. . . . The Bushmen, and still more the Strandloopers, are further removed from the negroid type than are the Hottentots."

4. "The Pygmy is quite distinct from all these groups, but in relative dimensions (of male skulls) resembles the western group of Bantu, occupying the seaward margin of the great forest zone."

And Shrubbsall sums up as follows:—

"The Strandloopers appear in all respects to be a purer group than the Bushmen, and to be distinct from the Hottentots, though the influence of chance selection cannot be quite excluded, owing perhaps to the small amount of material available.

"The up-country Bushman appears intermediate between the Strandloopers and Hottentots.

"The Hottentots present dimensions exactly intermediate between the preceding and the Bantu. They show in many features a small coefficient of variation, which tends to prove that the cross, if such is the true explanation, was of some standing and very complete. In many characters they approach the Negroes of British Central Africa more closely than the Kaffir tribes of the East Coast.

"The net result of the additions to the averages has been to mark out the Bushman race in some respects more sharply than before, and to show clearly that, although they approach the Simian type more closely than the other branches of mankind, the gap separating the two is very great."

Exception may, perhaps, be taken to the number of skulls, on the measurements of which Shrubsall's conclusions rest. He had at his disposal 105; but it is quite possible that the skulls labelled Hottentot or Bush were not classified with sufficient accuracy. From the time his paper was published—end of 1907—I procured him sixty-two additional skulls, with the *history* of nearly all. Those will form the subject of an important paper, which I had hoped would have been published at the same time as the present one.

This new material corroborates more and more Shrubsall's first conclusions. He writes as follows: "I am quite unable to distinguish between Hottentots and Bushmen. . . . The Bushmen are dolichocephalic. The Strandloopers are mesaticephalic, and nearer to the brachycephalic, but under eighty in index. Hottentots are more dolichocephalic. . . .

"The skulls of the George, Kynsna and Humansdorp caves can be distinguished at sight." . . . And on my questions respecting the possibility or improbability of a connection between the Strandlooper and the race of Grimaldi (Monaco), negroid cum australoid, and others he answers: "The brow ridges are more marked in the Strandloopers than in the Negro, and in this feature they are nearer palæolithic man."

All this evidence of physical characters seems thus to corroborate the conclusion I had arrived at on purely cultural evidence—that the Strand Loopers were ethnically older in South Africa than either the so-called Bush or the Hottentot.

In addition to the evidence derived from craniology or osteological measurements, there are other physical characters which, although not indicated by the skeleton, are, however, of very great importance. I have already stated that I have given up distinguishing, now, between a so-called Bushman or a so-called Hottentot. Nor am I so sure that the early Colonists did discriminate between the two from a differentiation in physical appearance only. Those who had herds of cattle, and were not too small, were Hottentots; the others, who lived mostly by the chase or kept no cattle or sheep, and were small, were Boschiesmen.

Fortunately Sir John Barrow, anxious to see who these so-called Bushmen were in reality, and in all likelihood commissioned by Lord

Macartney, then Governor of the Cape, to obtain *de visû* information as to this race, the depredations of which against the Colonists and their flocks were a constant subject of complaint, did at last succeed, in 1797, in coming across a clan of these people, and this is what he writes about certain of their physical characters:—

“Their bellies are uncommonly protuberant and their backs hollow, but their limbs seem to be in general well turned and proportioned. Their activity is incredibly great. . . . And as the means of increasing their speed in the chase, or when pursued by an enemy, the men have adopted a custom which was sufficiently remarkable—of pushing the testicles to the upper part of the root of the penis, where they seemed to remain as firmly fixed and as conveniently placed as if nature had stationed them there. It is highly probable that such an operation, in order to be effectual, must be performed at an early period of life. Some were said to have one up and one down, which may have given rise to the Hottentots being characterised, in the *Systema Naturæ* of Linnæus, as *Monorchides*.”

“Curious as this custom seemed to be, it was less a subject of remark than an extraordinary character that distinguished the other sex from the women of most nations. The well-known story of the Hottentot women possessing an unusual appendage to those parts that are seldom exposed to view, which belonged not to the sex in general, ridiculous as it may appear, is perfectly true with regard to the Bosjemans. The horde we met with possessed it in every subject, whether young or old; and, without the least offence to modesty, there was no difficulty in satisfying our curiosity on this point. It appeared on examination to be an elongation, or more correctly speaking a protrusion of the nymphæ or interior labia, which were more or less extended according to the age or habit of the person. That there is in this race of human beings a predisposition to this anomalous formation of the parts was obvious from its evident appearance in infants and from its length being in general proportionate to the age of the female. The longest that was measured somewhat exceeded five inches, and this was a subject of middle age. Many were said to have them much longer. These protruded nymphæ, collapsed and pendent, leave the spectator in doubt as to what sex they belong to. Their colour is that of livid blue, inclining to a reddish tint, not unlike the excrescence on the beak of a turkey, which indeed may serve to convey a tolerably good idea of the whole appearance both as to colour, shape, and size. . . .

“The great curvature of the spine inwards and the remarkably

extended posteriors are characteristic of the whole Hottentot race; but in some of the small Bosjemans they are carried to such an extravagant degree as to excite laughter. If the letter S be considered as one expression of the line of beauty to which degrees of approximation are admissible, some of the women of this nation are entitled to the first rank in point of form. A section of the body from the breast to the knee forms really the shape of the above letter. The projection of the posterior part in one subject measures five inches and a half from the line touching the spine. This protuberance consisted entirely of fat, and when the women walked it exhibited the most ridiculous appearance imaginable, every step being accompanied with a quivering and tremulous motion, as if two masses of jelly had been attached behind her."

I refer the reader to Pl. XXVIII. The four Figs. on this Plate reproduce absolutely, even in measurements, the description of Barrow. These models, which are casts taken on the living subject and therefore true in every detail, form part of a collection of nineteen which I have reasons to believe are relatively pure bred.*

This steatopygia is a physical character of great importance. It is not only encountered in the clay statuettes of prehistoric Egypt, but all the aurignacian or pre-solutrean figures of women discovered hitherto, whether carved out of ivory, stone, or horn, show it also in a very strongly developed form. Nor is it in archaic time only that this style of figuration, evidently reproduced from nature, prevailed. Statuettes exhibiting this development, but from sites which are accepted as neolithic, are known from the grottoes or caves of France and of Egypt; they have been met with in Malta, in Poland, in Roumania, Greece, Crete, &c. Even now, along the shores of the Mediterranean, the esthetic merit of *Venus callipyge* is very much appreciated.

Impossible as it is to decide if the present steatopygia of the Bush-Hottentot woman is or not a case of survival, she possesses

* Indignant, indeed, was the woman (Figs. 208, 209), whose steatopygia is not of extreme type, when it was suggested to her that she might be a Hottentot. No! she was a pure-bred Bush; and I have no doubt that she believed herself to be so. A brother of hers, however, who was of the same parentage—and a bad character who did not seem to recognise the difference between *meum* and *tuum*—was shot dead by another native, to whose goats he was helping himself. The body was secured, but the indices of the skull do not differ from those of the Hottentot. Yet the man was known as, or looked upon by his Hottentot congeners as well as by the Colonists, as a Bushman, a name in which his sister, as well as the other woman who forms the subject of Fig. 211, gloried.

another physical character, known under the term "longinymph," and of which I can find no indication in the representations of the aurignacian figurines of Brassempouy or Grimaldi, in the "Vénus impudique" of Laugerie Basse, or others. (See Fig. 211 of Pl. XXVIII.)*

But it cannot be said that this enormous, although variable elongation of the "labia minora" is restricted altogether to the Bush-Hottentot race; and the stories one hears of the "tablier-égyptien" seem to point to the great similarity of the latter to the "tablier hottentot."

Kolben, in his account of this peculiarity of the Hottentot woman, quotes Thévenot to prove that it is found also among the Negro and Egyptian women.

Frédéric Cuvier, in his "Histoire des Mammifères," expresses himself as follows in his account of the once-famous "Vénus hottentote": "It is known that the development of the nymphæ is very variable, and that Negro and Abyssinian women are so much incommodated by it that it is found necessary to remove these excrescences by the use of the knife or by cauterisation. All the young girls have to undergo the operation. The Portuguese Jesuits who, in the sixteenth century, converted to Catholicism the King of Abyssinia and part of his subjects, deemed themselves compelled to proscribe the practice, which they considered to be a survival of the former paganism of the nation. The result was that Catholic maidens could find no lovers or husbands.

"The Propaganda College sent a surgeon to verify the allegations of the missionaries, and on his report and advice the return to ancient custom was authorised by Papal decision."

It is very difficult to obtain reliable information as to the presence or absence of these appendages among the Xosa, Basuto, Zulu, or other tribes of Kaffirs; but I am assured in the most explicit manner that in the Transvaal, among the Ba-Klangwe—one of the various Thonga clans living on the East Coast—not only are the women longinymph, but that an *intombi*, or maid, not possessing these appendages would be repudiated as wife, and the lobola or purchase-money returned. At the time of the initiation rites the maidens,

* I am now satisfied that this growth is not artificial, but develops gradually with age. Nor is the steatopygia developed during or after pregnancy. The appendages of Fig. 211 are those of a woman who never bore children, and the steatopygia is much more developed in her than in Fig. 208. The longinymph character seems, however, to be sometimes lacking, even where steatopygia prevails. . . . Among the Masarwa women who are also longinymph (we have two casts in the collection) the steatopygia is greatly reduced, if even much noticeable.

standing together, proclaim loudly to the boys the amplitude of their secret charm.*

That the "tablier hottentot" is not confined to the South African relics of the San only is thereby proved; but one is inclined to come to the conclusion that, when found to occur in another race, this character has been transmitted by a San race having come in contact with another, or others, Hamitic or Negro, or perhaps both.

Another physical peculiarity of the Bush-Hottentot—but of man this time, and one which is comparatively very little known—is that the penis is normally carried horizontally and, in some young subjects, in a semi-vertical or even vertical position. This fact was known to the old Colonists who were acquainted with the Bush people. In fact, according to some who gave me the information some thirty years ago, the purity of the race was denoted by the angle at which the penis stood normally. Prison warders have assured me that such is the case, and this is corroborated by the photographs which we took of eight men, probably as pure bred as any now left.

Singular as these peculiarities are, the Aborigines of the Hottentot-Bush races have recorded them in the artistic productions they have left behind in the shape of rock-graving and paintings, productions which we know to be associated with the Stone Age or Ages of South Africa.

In scenes graved on rocks, when the human form is represented the technique is so primitive that, were it not for the phallus, always out of proportion to the size of the image, it would be impossible to recognise the sex. The phallus is, in all the cases known to me,† carried in a semi-vertical position or at a high angle. In paintings it is the same; man's genitalia are *never* hanging when Bush people are delineated.

In these painted scenes the artist is satisfied to denote the female sex by granting the subject an abundance of steatopygia; but in one scene, of which we have a tracing (a dance), the woman's longinymphal state is very plainly shown.

These gravings and paintings are now, it is feared, a lost art. But those who executed them have left behind the records of physical characters which were once essentially typical of, if not restricted to, their race.

* It has, however, been impossible to find out if this elongation of the labia is in this instance artificial or natural; but I have been assured lately that among the natives of North-Western Rhodesia its shape greatly differs from that of Fig. 211.

† These scenes are rare. I know of four only, and only men are represented.

CHAPTER XXII.

A NOTE ON CRANIOLOGY.

By F. C. SHRUBSALL.

The physical characters of the human remains from the caves and middens scattered along the South African coast are predominantly negroid, presenting the closest resemblance to those of the recent Bushmen. A study of the skulls has been more easily conducted



BUSHMAN.



KAFFIR.

FIG. 1.

than of the other bones owing to a greater wealth of material for comparison. The results so far obtained from the material preserved in the South African and Albany Museums are briefly sum-

marised in the following paragraphs.* Both Bushmen and Strand-loopers crania viewed from above present a marked prominence of the parietal eminences, the outline described by Sergi as *byrsoides*. This prominence is not noteworthy in Kaffir or Zulu crania, though seen to a lesser degree among the Bantu-speaking tribes on the west coast to the north of the Congo.

As seen in profile the resemblances between the Cavemen, Bushmen, and Hottentots are very close, but the former are somewhat larger and present fuller foreheads. In all the upper face is flattened, but there is some projection of the jaw, sub-nasal prognathism, the alveolar margin sloping obliquely forwards. This is least marked in the older cave remains, and most in the skulls from the Kalahari and in those of the Nama Hottentots. Prognathism is a negroid character.

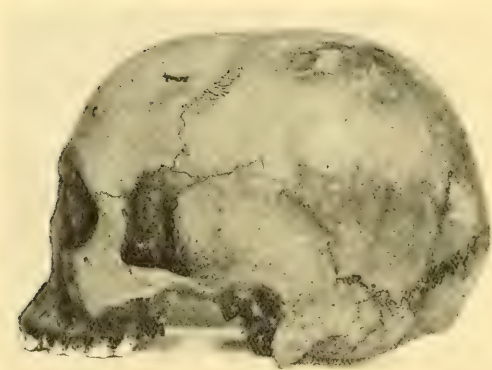
The crania show the bending of the basi-cranial axis, described by Huxley and Rolleston, to which further attention has been drawn by Keith, who has shown that it leads to the cerebral hemispheres projecting beyond the morphological anterior extremity to a marked degree, and causes the prominent forehead of the negro type. A further result of this flexion is a certain crushing of the forehead into the face. These features are somewhat less marked in certain specimens, notably those from the Blaawberg district, which seem to be of greater antiquity. Any divergence from the negroid type in early specimens is of considerable importance, and so far as the present evidence goes the earlier specimens are more divergent and present more primitive features. One skull—Fig. 3—has a more prominent nose and face with a greater lengthening out of the occiput, in some respects recalling the “river-bed” type of early European skulls.

All the cave and midden skulls present the character of shortness in the basi-bregmatic height, measured from the front of the foramen magnum to the junction of the frontal with the two parietal bones. It may be noted that this character more than any other serves to distinguish Hottentot from Bushmen crania, and that the Strand-loopers are thus still more remote from the Hottentots and Kaffirs. They are thus also removed from any resemblance to the negroid type described by Verneau from the Grimaldi caves at Monaco. Verneau compared the negroid Grimaldi skulls to Australians, while Keith has shown their resemblance to specimens from Fiji. The

* A first report appeared in Vol. V., and a further report will be presented as soon as possible.



STRANDLOOPER.



BUSHMAN.



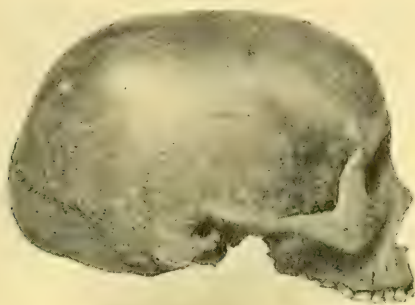
HOTTENTOT.

FIG. 2.

affinities of this early European type seem to be with the Oceanic rather than the African branch of the negro family.

In facial characters the Strandloopers and Bushmen are noted by broad rectangular orbits and short, broad chamæprosopic faces. The Hottentots have much higher more rounded orbits, approximating to those of the Bantu-speaking negroes.

The nasal orifice is somewhat larger in the older cave and midden skulls than in the later Bushmen. The lower margin of the nasal orifice is sharply cut and clearly defined in the former group; in the Bushmen it begins to be rounded off, while in the Hottentots and negroes it is rounded, and may even present the so-called simian grooves in which the floor of the nose runs out on to the anterior



STRANDLOOPER, BLAAWBERG.

FIG. 3.

surface of the maxilla with no defined margin at all. In this respect it is possible that the Strandloopers present a more primitive feature. These features of the nose and the degree of sub-nasal prognathism may be of importance in relation to the question of the affinities of the Hottentots. If the Strandloopers represent the earliest of the Bushman race, and present a sharp-cut nose and orthognathous face, while the Hamitic peoples, so far as we know them from the Egyptian relics, present the same features, it is not entirely easy to describe the Hottentots, who are sub-nasally prognathous with rounded nasal margins, in terms of a cross-breed. Some other element seems required. The influence of environment as a competent factor is, to say the most, unproven. These features

seem to confirm the evidence of comparative measurements that the Hottentots possess some strain of negro blood.

The cranial capacity of the Strandloopers is distinctly greater than that of either Bushmen or Hottentots, and it is interesting to note

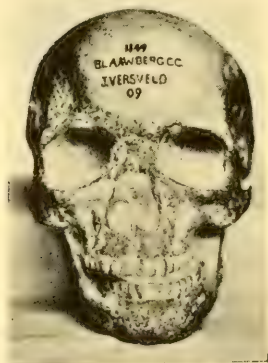


BUSHMAN.

STRANDLOOPER.



WEST COAST BANTU.



STRANDLOOPER.

FIG. 4.

that the skulls which have the greatest presumptive antiquity are the largest. Some exceed 1,600 cc., while a female of the Bush race from the Kalahari only just reaches to 950 cc., being thus one of the least capacious on record. If the Bushmen are the unmixed

descendants of the cave-dwellers there has been a distinct degeneration in the size of the brain.

AVERAGE CRANIAL CAPACITY IN CC.

Males.

Strandloopers.....	1,500	Cape Bushmen	1,260
Kalahari Bushmen	1,300	Hottentots.....	1,380
Bastaard.....	1,420	Eastern Bantu	1,520
Western Bantu	1,420	Grimaldi Negroid	1,580

Females.

Strandloopers.....	1,350	Cape Bushmen	1,200
Kalahari Bushmen	1,100	Hottentots	1 280
Grimaldi Negroid	1,375		

The general table of dimensions shows a gradation from Strand-looper-Bush-Hottentot-Bantu, but it will be noted that the Hottentot and Kalahari Bush females closely resemble one another. Some

AVERAGE DIMENSIONS IN MILLIMETRES.

	Length of Cranium.	Breadth.	Height.	Bizygomatic Breadth.	Naso- alveolar Height.	Nasal Height.	Nasal Breadth.	Basal-nasal Length.	Basal- alveolar Length.
<i>Males.</i>									
Strandloopers.....	181.3	138.0	124.4	122.5	60.4	42.8	25.1	94.2	92.4
Bushmen (Cape)	179.0	134.4	125.2	121.9	60.9	42.5	26.0	95.3	94.5
Bush, S. Kalahari	179.8	132.2	125.0	127.0	62.7	45.2	27.5	98.3	101.0
Hottentots	183.6	133.9	132.0	126.0	65.5	45.6	26.6	99.0	100.2
Eastern Bantu ...	186.6	133.2	136.2	131.7	69.0	47.6	27.4	103.1	103.8
Western Bantu ...	179.1	135.8	133.7	128.6	66.4	47.5	26.8	100.9	103.9
Grimaldi Negroid, adolescent male	192.0	133.0	137.0	130.0	—	46.0	25.0	99.0	—
<i>Females.</i>									
Strandloopers.....	171.6	135.8	121.9	118.4	56.5	41.6	23.8	90.0	88.1
Bush (Cape)	171.6	132.4	120.6	114.3	57.3	41.7	23.5	89.5	87.9
Bush, S. Kalahari	172.1	128.8	124.6	118.2	60.9	42.2	25.8	95.0	94.0
Hottentots	175.6	133.4	124.0	120.4	60.9	44.0	26.0	94.9	94.0
Negroes	175.2	129.9	129.5	—	—	44.4	25.7	96.9	98.4
Grimaldi Negroid, old female.....	192.1	131.0	129.0	129.0	—	44.0	28.0	101.0	—

doubt exists as to the latter specimens being those of pure-blooded individuals, in view of the confusion between Bushmen and Hottentots in recent times and the certainty that Bush women were incorporated in Hottentot families.

The teeth are much worn in both the cave-dwellers and recent Bushmen, but the former show no signs of the crowding of the jaw or of the dental irregularities, which are a marked feature of the specimens from the Kalahari. This may be evidence of some degree of impurity in the latter stock, the larger teeth of the negro appearing without a proportionate enlargement of the jaw; but against this should be set the reduced cranial capacity of many individuals and the predominant Bush features. The stature of the Kalahari specimens shows a wide range of variation, 4 ft. 10 in. to 5 ft. 6 in. The cave-dwellers varied from 4 ft. 9 in. to 5 ft. 2 in., being thus a little taller than the majority of the up-country Cape Bushmen; though, excepting for the possibly legendary Kattea, the northern colonial Bushman was always described as taller than the coastal tribes.

The evidence points to the Strandloopers being the most primitive race of South Africa, and, as the earliest specimens are the least negroid, it is possible that further researches may show adequate distinctions from the Bushmen.

There are no definite resemblances between the Strandloopers and the negroid type described by Verneau from the Grimaldi caves, the crania of which are longer, narrower, higher, with wider zygomatic arches and a quite different outline.

A few Egyptian crania in outline somewhat resemble Bushmen, and in dimensions, as previously shown in Vol. V., resemble Hottentots, but there is no sufficient evidence as yet to establish a connection. More data are needed as to the cranial form and dimensions of the early Hamites before the theory of origin of the Hottentots can be adequately tested, and the materials as yet are lacking. Much is to be hoped for from the search for the early Cavemen now going on, provided the stratigraphical and geological evidence of antiquity can be established.

CHAPTER XXIII.

THE COLDSTREAM CAVE.

In Chapter XVI. I have embodied Mr. T. S. Henkel's account of his visit to a cave, or rather rock-shelter, discovered by Mr. C. J. Whiteher, senior, in the Humansdorp District of the Cape Colony. I have also described and figured some of the objects discovered by Mr. Whiteher.

By his kind permission and generous help, for which I express here my warmest thanks, we were enabled to continue the excavations of the cave on a preconcerted plan. Mr. J. Drury, of this Museum, was deputed to investigate the contents under well-defined instructions—a work which he has most satisfactorily executed, until circumstances beyond his control bade us cease work temporarily.

A full account of the result of this research will appear shortly.

I may, however, summarise it by explaining here that we were rewarded by finds of importance. Among bone tools of different size, were some of a shape differing from those I have figured in this paper, especially an oblong ivory-bead, 35 mm. long by 28 mm. thick, perforated in the usual !kwè fashion, &c. Funeral stones, of the shape of Fig. 199 in Plate XXVII., were discovered, and among them one bearing three polychrome, wonderfully well-preserved pictures of Bushmen, far better executed than anything I have as yet seen. The face is painted white, and the crescent-shaped process noticeable in Fig. 199—which I took at first to be possibly the mark of a clan—stands for the hair and is black. The delineation of the eye is still noticeable, and one of the faces bears streaks of red, plainly intended to represent the embellishments in use among the members of the clan. This stone was found resting on the shoulders of a hunched-up skeleton lying on its side. There is now no doubt that the Figs. 199, 200, and 201 in Plate XXVII. were also used for the same purpose in the burial ceremonies of some of the Strand Loopers.

I was hoping, as this rock-shelter had been but little disturbed, that we might obtain there evidence that would go to show whether or not the former inhabitants there inhumed had manufactured implements of palæolithic style, in contradistinction to the neolithic ones obtained in the sand-dunes, the littoral middens, or the rock-shelters of the inland districts. Nor was I mistaken.

Interspersed in all the layers, as deep as we went, was found a great quantity of moderately large, uncouth chips, most of them with at least one cutting edge, but which had flaked in a manner somewhat different from that with which I am acquainted. This I have found to be due to the quartzitic condition of the *rounded* pebbles used. Among these were found three which are, undoubtedly, of the palæolithic boucher type.

The first is an axe-like cleaving implement, plane on one side, having evidently been detached from the matrix at one blow; the reverse is pluri-faceted, the lower part being produced in a broad, slanting, bevelled edge resembling that of a carpenter's chisel, and bearing traces of use. It resembles Fig. 57 of Plate VIII. The quartzite used breaks readily into this shape. The implement is 126 mm. long, 85 mm. at its widest part, and 25 mm. in thickness. The second is a boucher of oblong-ovate form, not unlike that of Fig. 24 in Plate III. One side is the natural surface of a very flat, almost plane, water-worn pebble of the kind used for placing over the bodies: the other side has been obtained by repeated flaking, which has produced many short facets resembling greatly secondary chipping; this style of flaking was seemingly necessitated by the composition of the matrix. The implement is 170 mm. in length, 110 mm. in width, and 31 mm. thick. The third example is a large, lanciform scraper-flake of the same shape as those represented in Plate XIII., Fig. 4.

The presence of these three examples may not be thought *a priori* to be sufficient evidence that the two styles of stone industry are the handiwork of the Strand Looper aborigines inhumed in this Cold-stream shelter. But the size and shape of the flakes interspersed in the layers, which were removed to a depth of nearly 16 feet, plainly indicate that they are not of the small type of South African neolithic, although some of the latter were also found with them; they are the by-product of moderately large bouchers, in spite of the scarcity of the latter in the cave.

There is also no doubt whatever that together with these flakes, large and small, and on the same levels, were found mullers or pounders of the type of, or similar to, those figured in Plate XXIII.,

Figs. 168 and 170. Several large ones, plainly used as hammers, are broken by the force of impact; the ends of others are strongly abraded, &c. !Kwès were met with on or near the surface, but a broken one was found at some depth and close to a rimming stone.

On the other hand, these implements show no sign of old age, nor could they, owing to the position in which they were found. Manufactured on the spot, as shown by the flakes, finished or partly finished *in situ*, they would be covered rapidly by, or lost in, the debris. Their scarcity is, however, not easily explained.

Along the littoral, and especially at the St. Blaize rock-shelter below the lighthouse, there have been found, not in the shelter but in the open, long flakes similar in texture and execution to some which I had occasion to examine lately, and also bouchers not unlike in technique, and especially in "modern" appearance, those from Coldstream; an appearance, and also a certain similarity, equally shared by some of the implements found at Fishhook and Cradock (see Chapter VI.).

Does it follow, however, that these implements of palæolithic type are comparatively modern? The Coldstream shelter has, in all probability, been occupied many times over. On the surface of the floor have been found objects truly modern, such as parts of a tinder-box. Our search near the parietal part has yielded pieces of copper of what was presumably a ship's compass. But at a depth of from 8 to 14 feet the skeletons found are no longer of the dwarfish stature of the Strand Loopers. We have a much longer-limbed, more robust race—which is at present under investigation—the presence of which is not easily accounted for. No complete skull has as yet been found. Whatever be the race, however, the implements of South African neolithic type, as well as of the palæolithic, are found in the same strata in which the skeletons of the small race and of the latter race occur, and there are no means so far of identifying the antiquity of either.

But, in spite of the reservations I made regarding drawing conclusions from the appearance or workmanship of knife- or scraper-flakes, when dealing with the geological evidence I have mentioned on page 80, the raised beach in which a knife-scraper flake was found by Dr. A. W. Rogers: "a piece of quartzite which appears to have been shaped by man—in limestone which must have been formed at a time when the land stood at least 15 feet lower than now."

This flake-knife is of the same texture and style of manufacture as others found in caves or shelters of that part of the littoral, and also

in the Coldstream cave (see Figs. 114 on Plate XIII.). And the statement of Mr. G. Robertson's that "pounders," &c., have also been found in the limestone is the more strengthened by the fact that in one of the few caves or rock-shelters of the littoral which have remained undisturbed, palæolithic and neolithic types have now been proved to have been coeval.

We have no means of ascertaining the duration of time necessitated by the rise of the end of a continent to a height of 15 feet, and the consequent regression of shore to an extent of two miles, if not more.

But on lithic evidence it must now be taken as granted that the industry of the Strand Looper is of very ancient origin.

Did it evolve with them, was it imitated by them, was it a case of survival of methods with the inhumed inhabitants of the Coldstream rock-shelter? It is impossible to pronounce on these questions at present.

But I am inclined to believe, from the examination of all the finds from there, that the lithic industry was on the wane; bone tools are in the ascendant; stone is used only for such purposes where bone could not be employed as a substitute.

Yet, to draw the conclusion that all the implements of palæolithic type are not more ancient than those of the Coldstream cave, or those found in the littoral, would be erroneous.

The same antiquity can be claimed for the palæoliths of Stellenbosch, Griqualand, and Rhodesia as is claimed for those from the Pyrennees, from Madrid, from Madras. A practised eye sees what is often undescribable. It is possible that the lithological tenets obtaining now in Europe may have to be greatly rejuvenated, involving thereby a lesser antiquity for our own, markedly ancient, bouchers; but there will still remain that inexplicable difference between what is indeed ancient and the comparatively modern.

But in South Africa the two methods, palæolithic and neolithic, have survived in a coeval manner to a period of comparatively recent, or even very recent, date.

CHAPTER XXIV.

CONCLUSIONS.

Were conclusions to be drawn from the documentary evidence they would be summed up as follows :—

All over South Africa are scattered numberless palæoliths that find an absolute counterpart in those occurring in the rest of Africa, India, Arabia, Europe, &c., but not in Australia.

If my theory is correct, *e.g.*, that the rolled boulder, pebble, or nodule lends itself more naturally than any other stone to the production of the implements of Chellean-Mousterian type, and has on that account been the more readily utilised, then the occurrence of this type in places far remote, or even sundered, is explained.

The facies of these palæoliths, South African or African, is also such that it is not unreasonable to formulate the opinion that this probably accidental discovery—the stone implement—originated in Africa, and was transmitted or transported thence to Asia and Europe, it may be by the Neanderthal or River-Drift man, the dolichocephaly of which is so characteristically African.

If a close comparison is made between European and South African palæoliths, other than scrapers and like objects, we discover, however, certain discrepancies. Thus, the South African bouchers of Chellean-Acheulean-Mousterian types are found side by side, and in such a position, or in such “factory sites,” that we are compelled to look upon them as having been made by the same people and at the same time. Therefore the amygdaloidal Chellean or Acheulean form is not here an advance on the less finished, somewhat spall-like Mousterian, whereas in Europe the latter is considered by many, if not most, antiquarians to be of posterior date.

Another characteristic of the South African palæolithic series is the huge size of many of the tools and the proportionate dimensions of the nuclei.

It has been shown also that the purport of the bouchers is better explained here than that of similar implements found elsewhere, especially those made of the same material. They are plainly digging or cleaving tools, purposely trimmed.

Here, as in Europe, we find palæoliths in alluvium, on terraces, on plateaux. But the situation of these finds cannot be said to be as convincing regarding their relative age as, for example, those of the Thames or Somme valleys. Yet it is impossible to deny to some of our local finds an antiquity comparable with that of the River-Drift period of Europe.

On the other hand, we meet in certain situations or sites with palæoliths of archaic form together with coarse chips, flakes, nuclei of the Bush type which I term South African neolithic (Fishhook), or so perilously near a "factory site" of similar implements (Cradock) that the question may well be asked, Are not the palæoliths and neoliths coeval? Have they not kept pace, the one with the other, without the first merging into the second, differing in this manner from the Aurignacian following the Mousterian, but supplanting it?

After the discovery in the Coldstream cave of implements associated in the sepultures with bone implements, pounders, mullers, braders, and also with polychrome and monochrome paintings on stones, this question must be answered in the affirmative; and we have here no hiatus in the chronology of implements such as exists still in Europe.

Truly these implements have not the patina of those found on the surface or exposed in cuttings, or talus, nor that indescribable something which, to the practised eye, tells of great antiquity. The "altogether," however, is that of the bouchers and scrapers of Fishhook, and also of those of the neighbourhood of the St. Blaize rock-shelter, and of the scraper found in the raised beach of Braak River. It is therefore impossible now to doubt that the Strand Looper aboriginal manufactured these palæoliths, and moreover, that some of them are of great antiquity. Whether all the palæolithic type artefacts are to be ascribed to him remains an open question.

But that the race is a very old one would seem also to receive corroboration from the physical peculiarities which are essentially his own.

The occupier of the Knysna-Humansdorp caves is less dolichocephalic than the other two South African groups of the San—he is mesaticephalic but under 80 in index. He was artistically gifted,

like the race which occupied and decorated the Altamira, Marsoulas, and other caves of Spain and France. He painted; he possibly carved on rocks; he used bone tools; he made pottery; he perforated stones for either heading clubs or to be used as make-weight for digging tools; his ornaments consisted of sea-shells; and the ostrich egg-shell discs which he made may be said to be a typical product of his industry. And this culture is retained in South Africa by a kindred race, but more dolichocephalic—the Bushmen-Hottentots.

The traces which he has left of his culture are now traced in Africa from Cape Agulhas in the south, to Cape Bon in the north. Even in neolithic sepultures of Spain his typical egg-shell discs are found. Analogous are most of his tools and his expression of culture to those of Aurignacian man.

But in spite of this great resemblance, or perhaps similarity, it is risky, to say the least, to uphold the Strand Looper as the linear descendant or living representative of the man of Solutré or Aurignac. Of the physique of the latter we know nothing beyond the steatopygia of his women, which he has reproduced in his figurines, and perhaps exaggerated; and we can judge of him only by the relics of his culture, which does, however, strikingly resemble in some respects that of the Strand Looper branch of the San.

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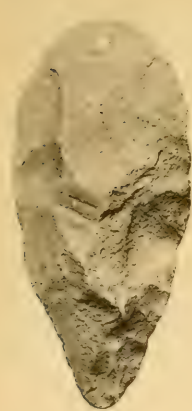
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1



1a



2

232 x 85 x 35 m.m.



2a



3

123 x 70 x 44 m.m.



4

115 x 65 x 27 m.m.

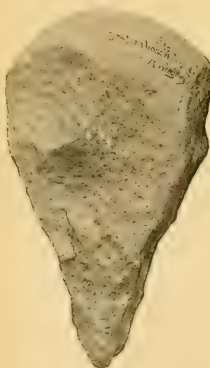


4a



5

177 x 112 x 73 m.m.



6

185 x 117 x 61 m.m.



7

163 x 82 x 62 m.m.



8

123 x 70 x 44 m.m.



9

271 x 125 x 75 m.m.



9a



10

256 x 107 x 78 m.m.



10a



11

164 x 85 x 48 m.m.



11a



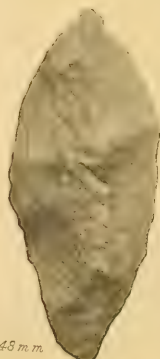
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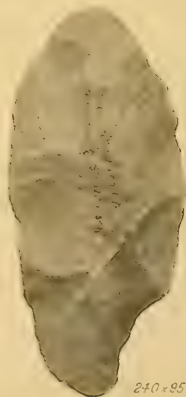
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175 x 79 x 50 m.m.



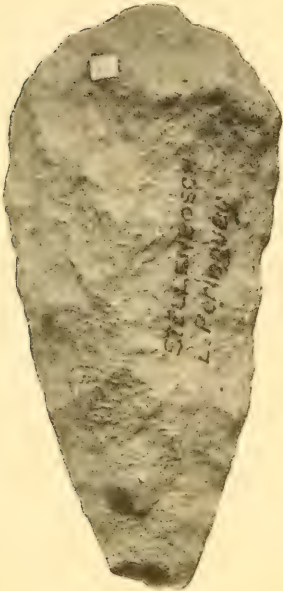
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183 x 60 x 45 m.m.



15

240 x 95 x 57 m.m.



16

176 x 85 x 50 m.m.



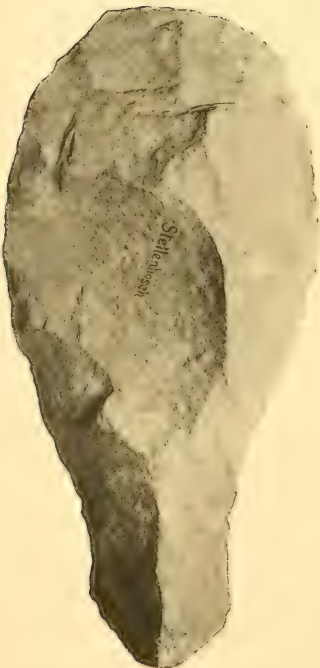
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190 x 102 x 35 m.m.



18

99 x 62 x 31 m.m.

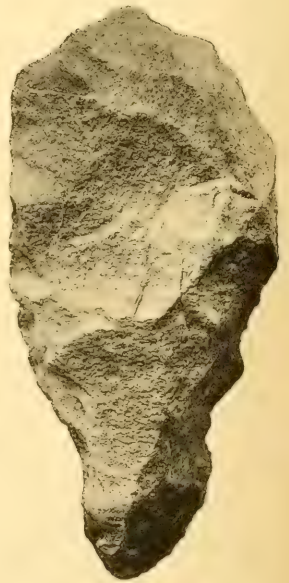


20a



20b

330 x 158 x 101 m.m.



21

200 x 95 x 31 m.m.



19

114 x 59 x 23 m.m.



23

70 x 67 x 54 m.m.



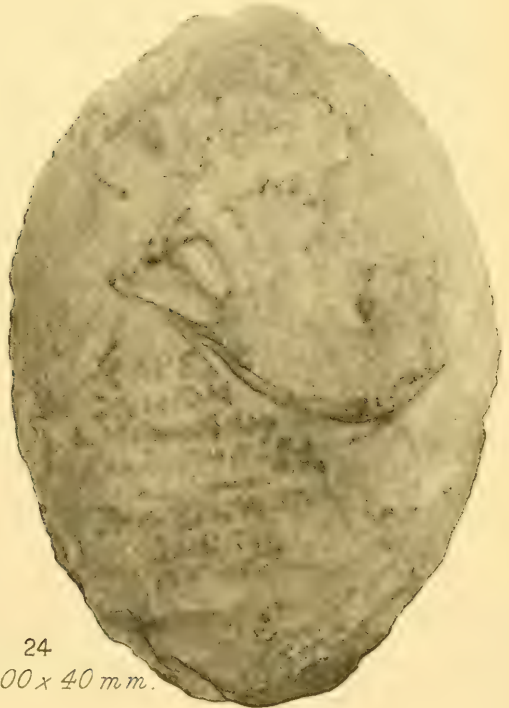
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270 x 124 m.m.



22

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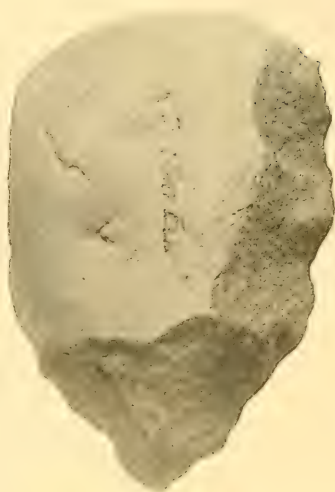
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144 x 100 x 40 m.m.



25

139 x 72 x 45 mm.



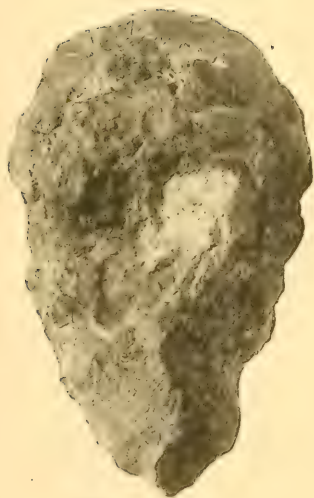
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137 x 91 x 44 mm.



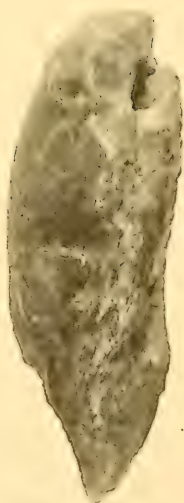
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131 x 81 x 62 mm.

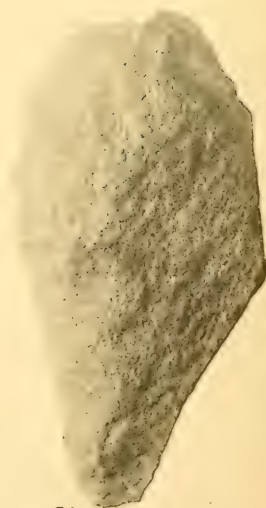


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192 x 119 x 68 mm.



30a



31

200 x 97 mm.



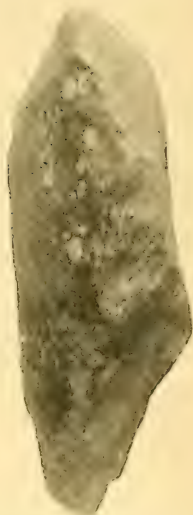
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111 x 57 x 25 mm.



29

194 x 122 x 65 mm.

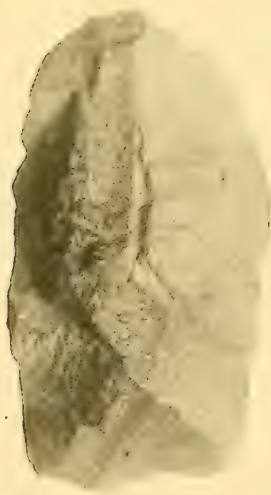


29a



32

227 x 106 mm.



33

187 x 103 x 55 mm.



34



35

151 x 73 x 37 mm



35a



36

174 x 93 x 36 mm



36a



37

163 x 94 x 42 mm



37a



38

133 x 66 x 28 mm



38a



39

139 x 65 x 26 mm



39a



40

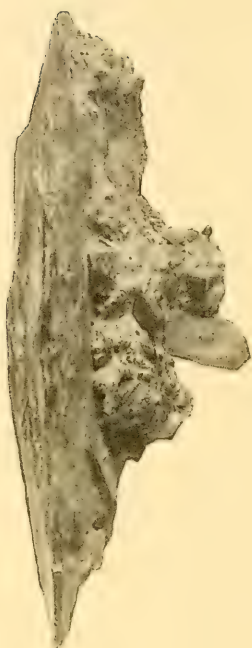
111 x 75 x 26 mm



40a

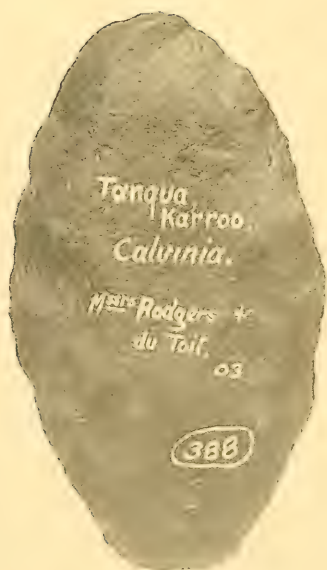


41



41a.

220 x 122 x 81 m.m.



43



43a.

172 x 110 x 39 m.m.

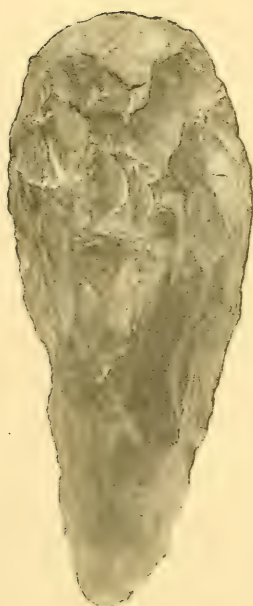


42



42a

240 x 100 x 60 m.m.



44



44a

186 x 79 x 42 m.m.



47

157 x 86 x 53 mm.



47a



48

157 x 87 x 44 mm.



48a

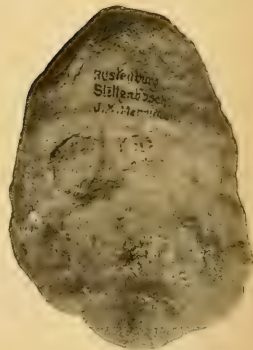


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120 x 75 x 29 mm.



49a

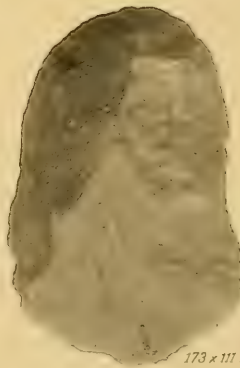


50

167 x 116 x 45 mm.

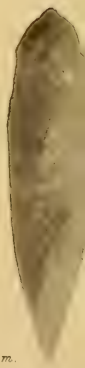


50a



51

173 x 111 x 45 mm.



51a



52

240 x 133 x 45 mm.



53

198 x 117 x 42 mm.



54

119 x 83 x 33 mm.



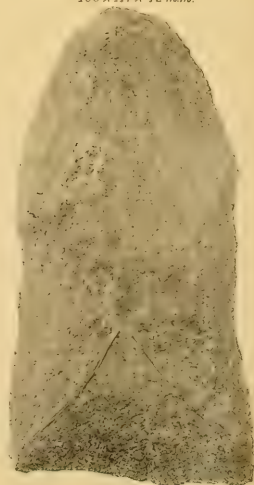
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83 x 64 x 29 mm.



56

170 x 73 x 59 mm.

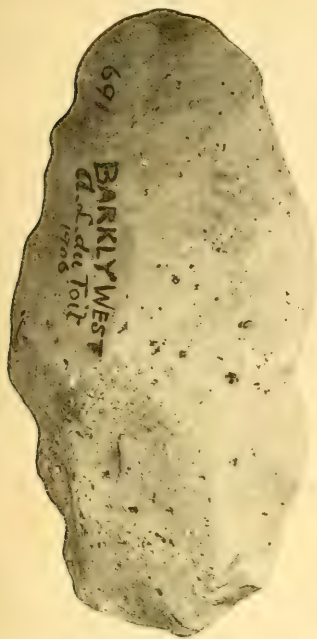


57



57a

177 x 118 mm.



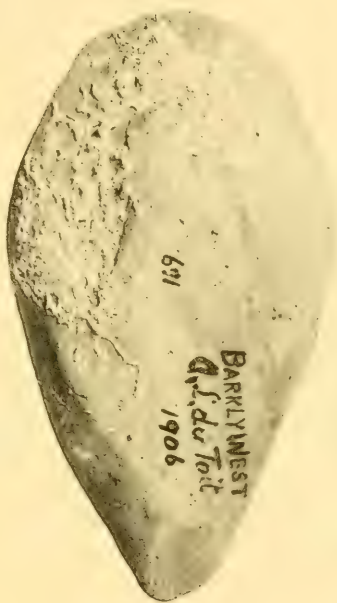
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155 x 82 x 55 mm



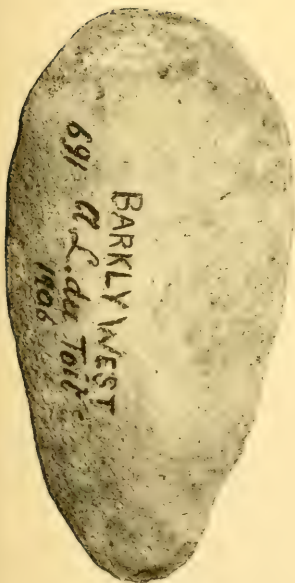
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128 x 59 x 32 mm



59

149 x 83 x 34 mm



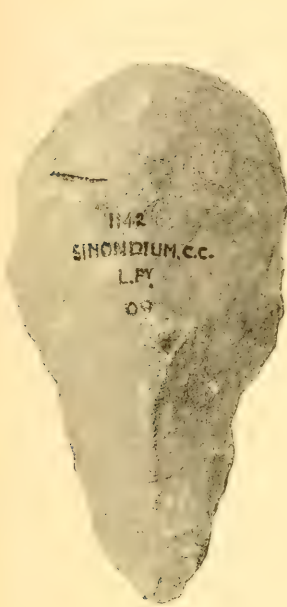
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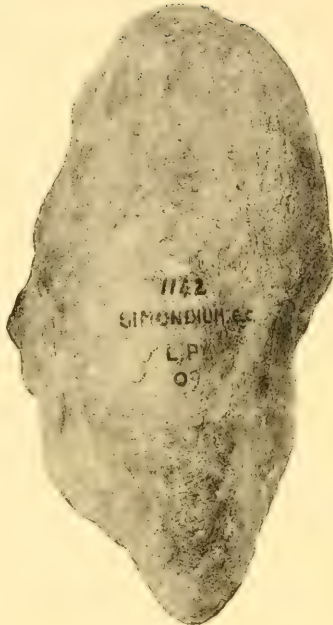


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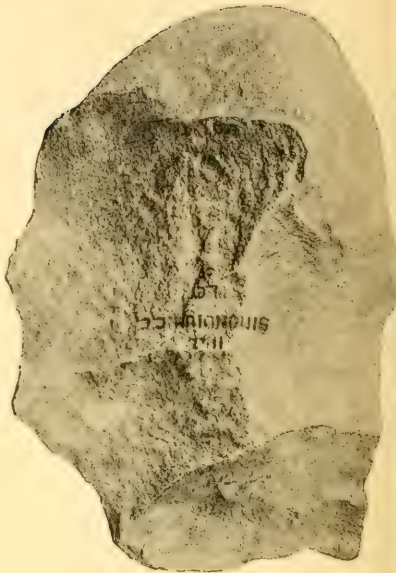
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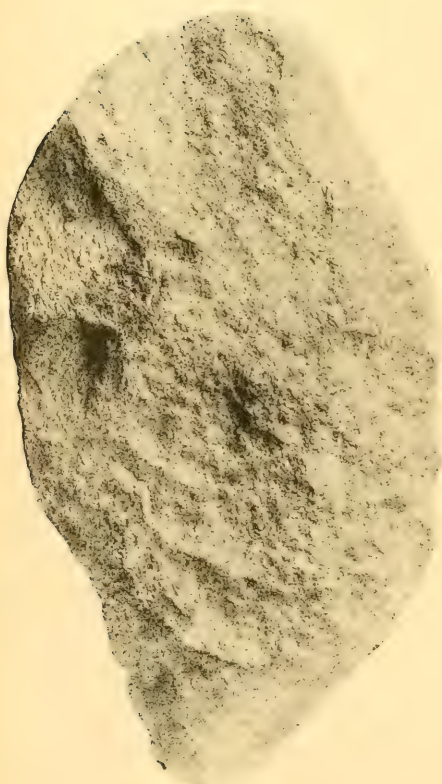
62 $\times \frac{2}{5}$



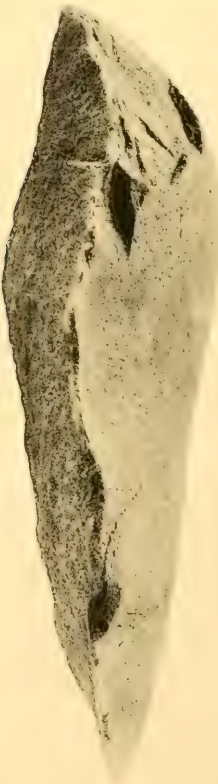
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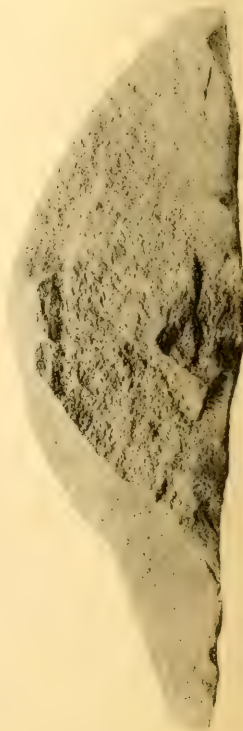
64 $\times \frac{1}{3}$



68 $\times \frac{2}{5}$



69 $\times \frac{2}{5}$



70 $\times \frac{2}{5}$



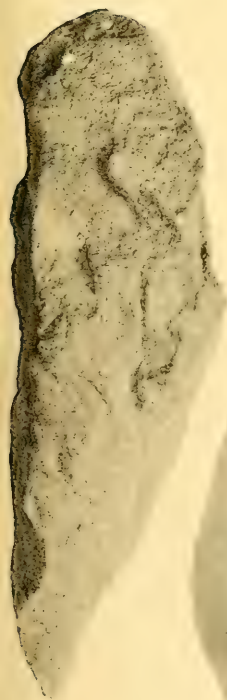
65 $\times \frac{2}{5}$



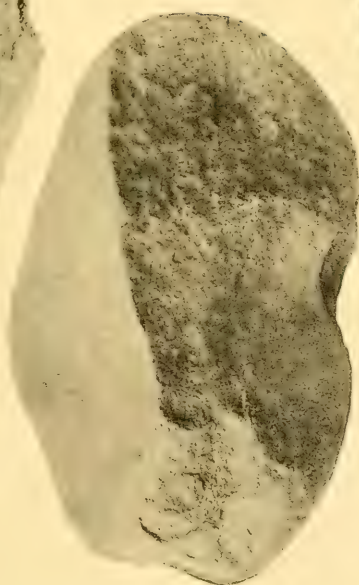
66 $\times \frac{2}{5}$



67 $\times \frac{2}{5}$



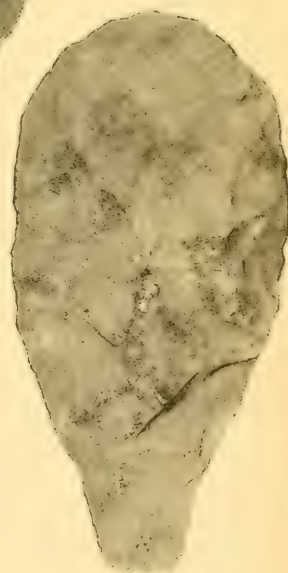
71 $\times \frac{1}{3}$



72 $\times \frac{1}{3}$



73 $\times \frac{1}{3}$



74 $\times \frac{1}{3}$



75 $\times \frac{1}{2}$



76 *nat. size*



77 *nat. size.*

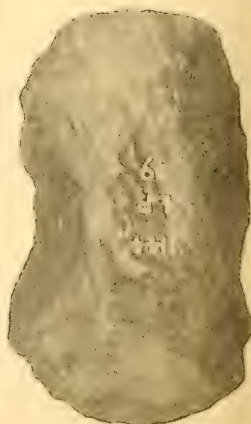


1144
FISHHOEK
CAPE DIVISION
J.M.BAIN
09

358 \times 125 \times 67 m.



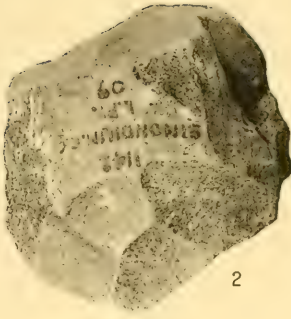
85 *nat. size.*



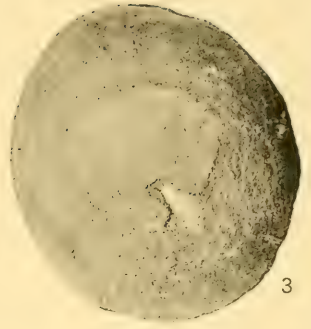
86 $\times \frac{1}{2}$



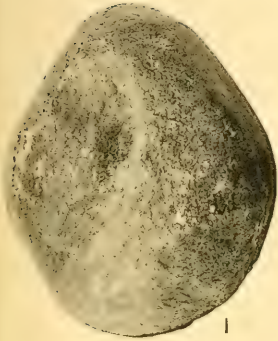
78 $\times \frac{1}{2}$



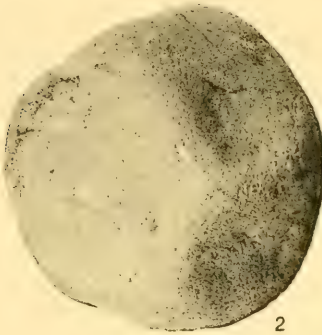
79 $\times \frac{1}{2}$



80 $\times \frac{1}{2}$



81 $\times \frac{1}{2}$



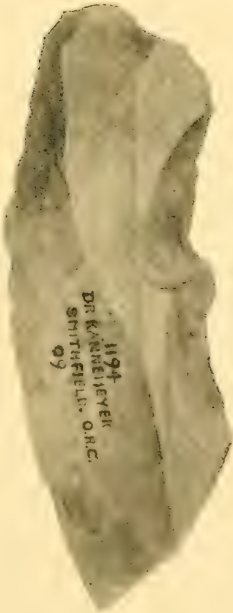
82 $\times \frac{1}{2}$



83 $\times \frac{1}{2}$



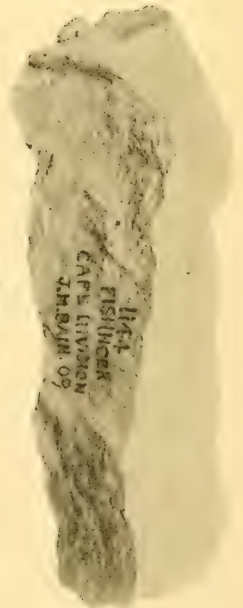
87 $\times \frac{1}{2}$



1
88 $\times \frac{1}{2}$

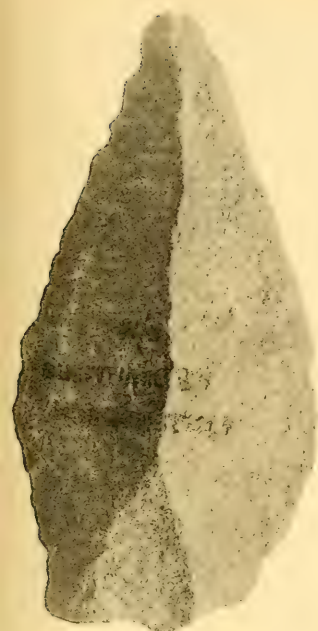


2
89 $\times \frac{1}{2}$

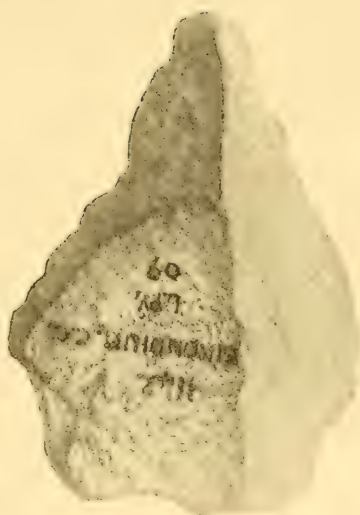


3
90 $\times \frac{1}{2}$

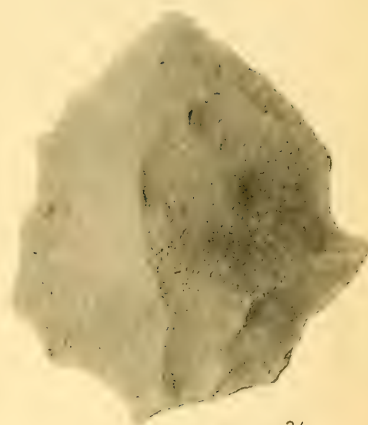




93 $\times \frac{2}{3}$



94 $\times \frac{2}{3}$



95 $\times \frac{2}{3}$



96 $\times \frac{2}{3}$



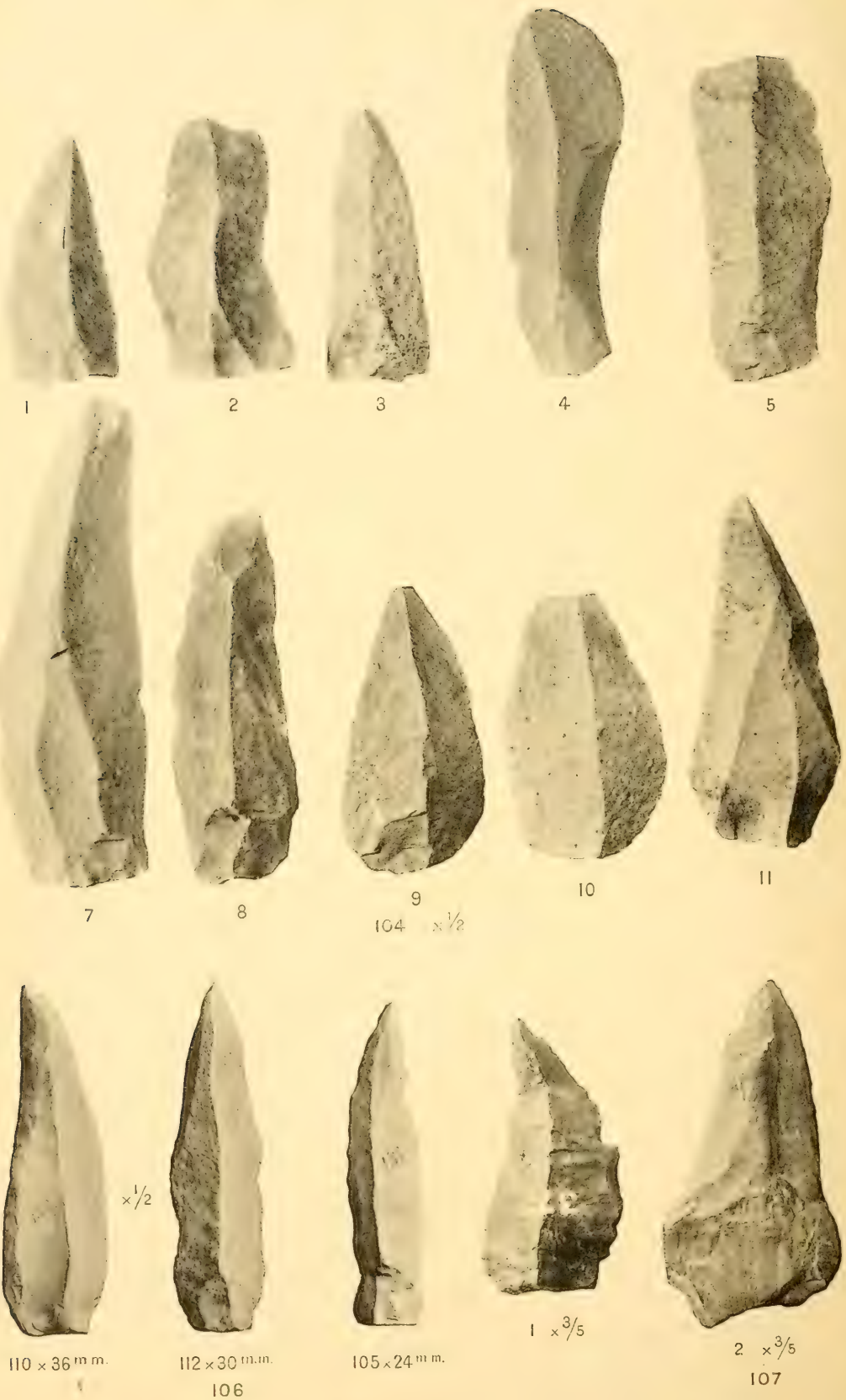
101 $\times \frac{3}{5}$



102 $\times \frac{2}{3}$

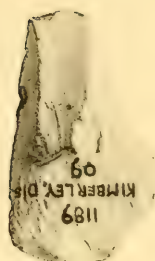


103 $\times \frac{2}{5}$

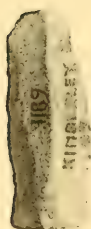




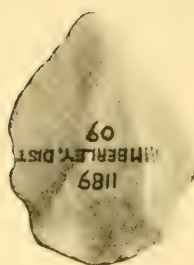
6



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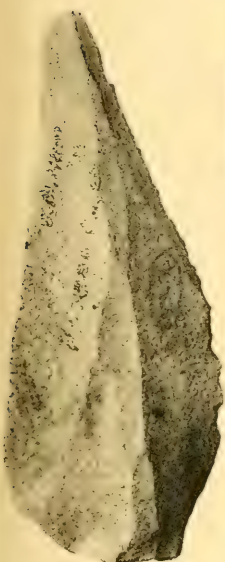
6



7

$\times \frac{2}{3}$

105



12



$1 \times \frac{4}{5}$

108



1



2

109

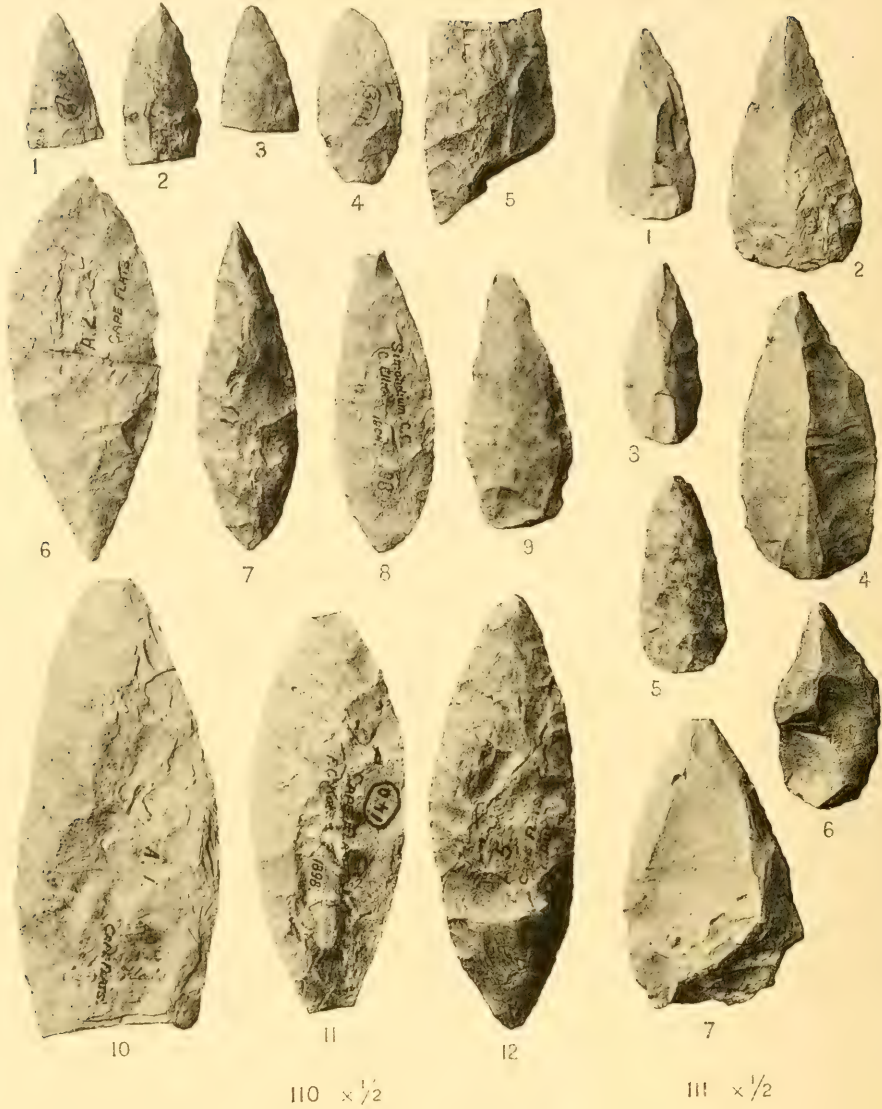


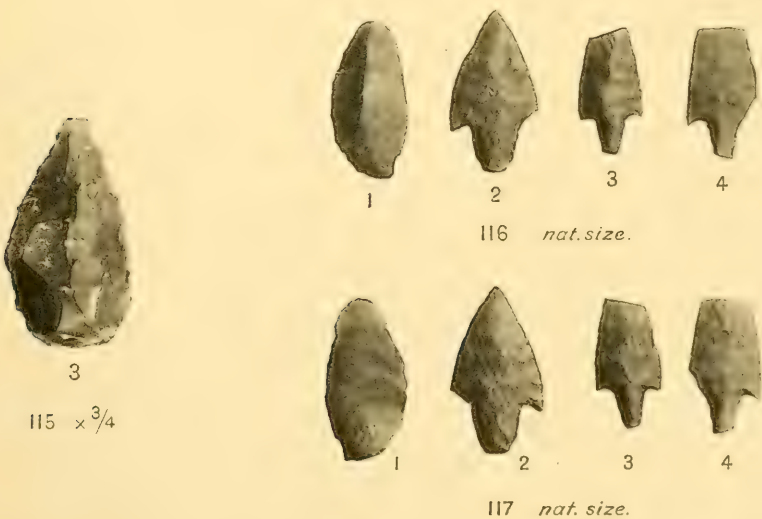
$3 \times \frac{3}{5}$



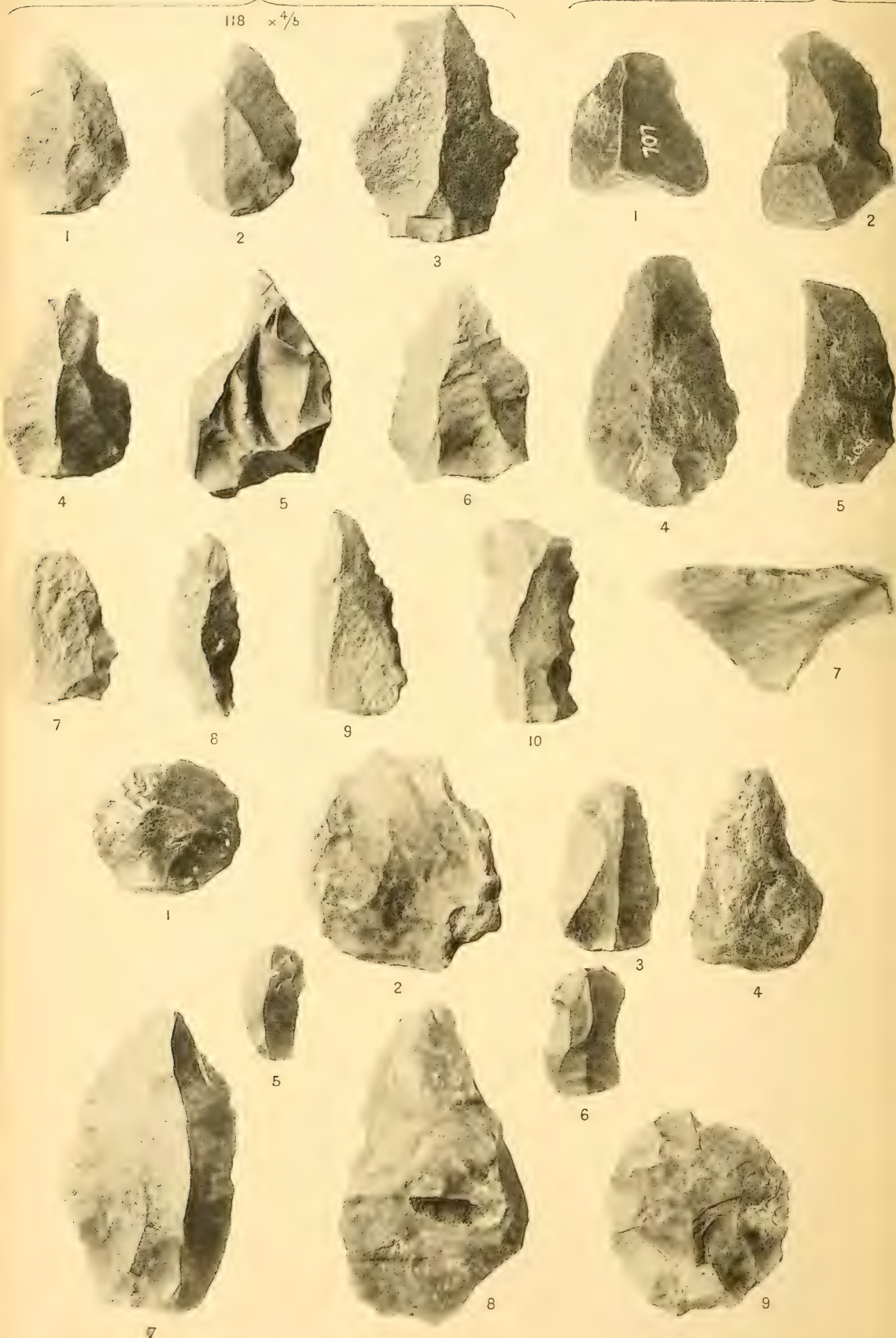
$2 \times \frac{4}{5}$

108



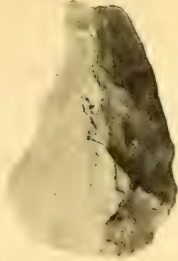


118 x 4/5

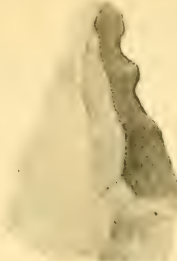




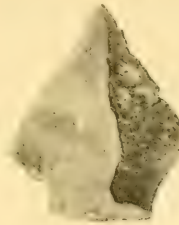
3



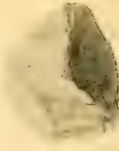
1



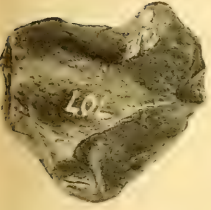
2



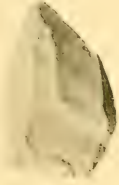
3



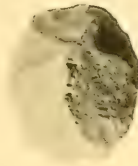
4



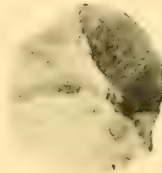
6



5



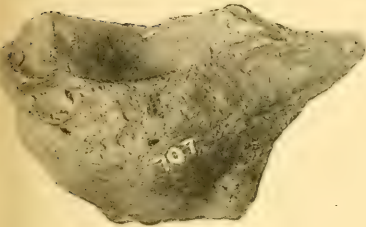
6



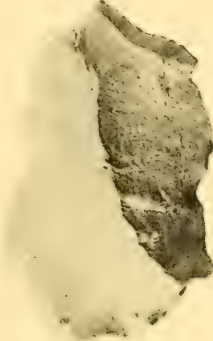
7



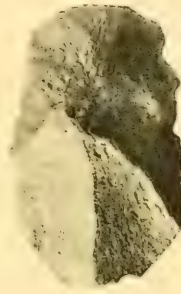
8



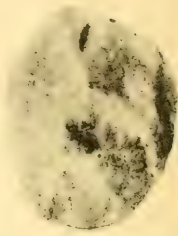
8



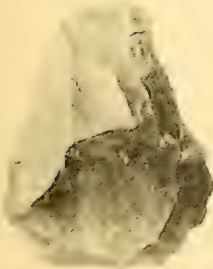
9



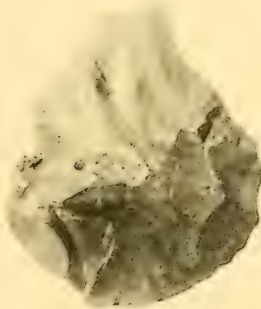
10



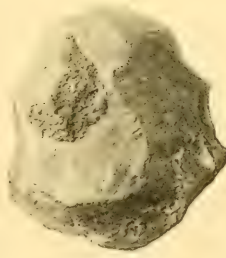
11



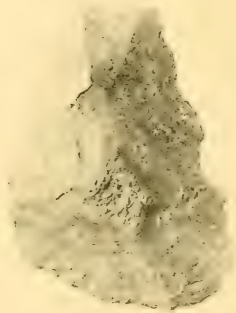
1



2



3



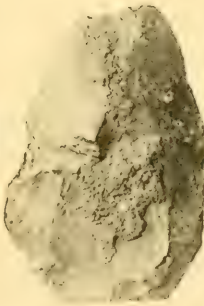
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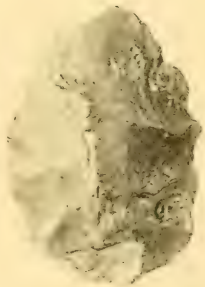
5



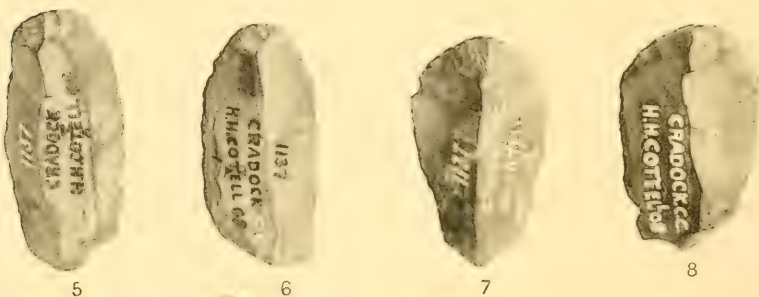
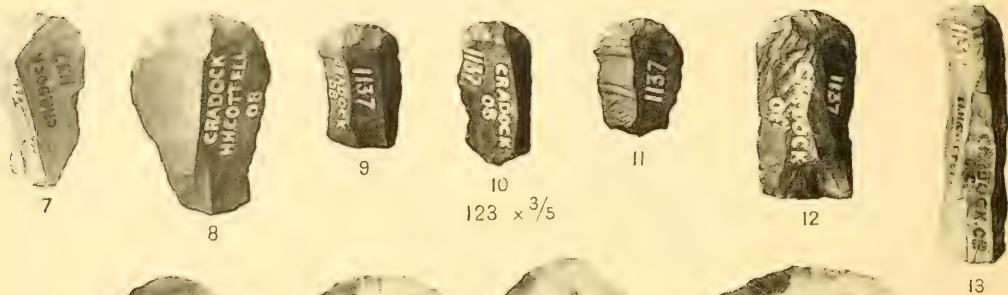
6

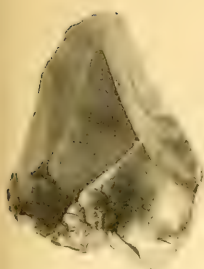


7



8





124 $\times \frac{4}{5}$



1



2

126 *nat. size.*



1



2

125 *nat. size.*

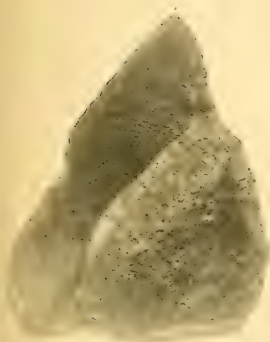


1



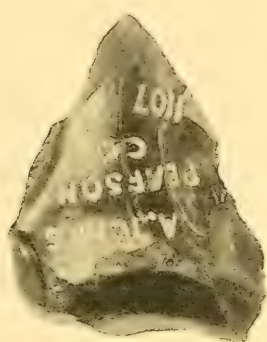
2

127 *nat. size.*



1

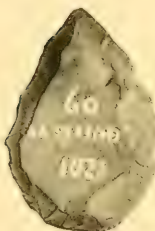
129 *nat. size.*



2



1

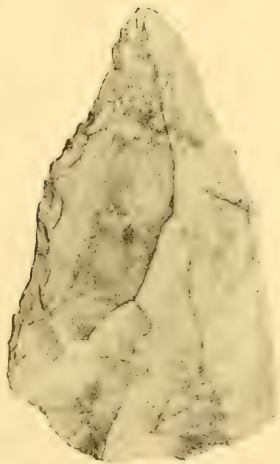


2

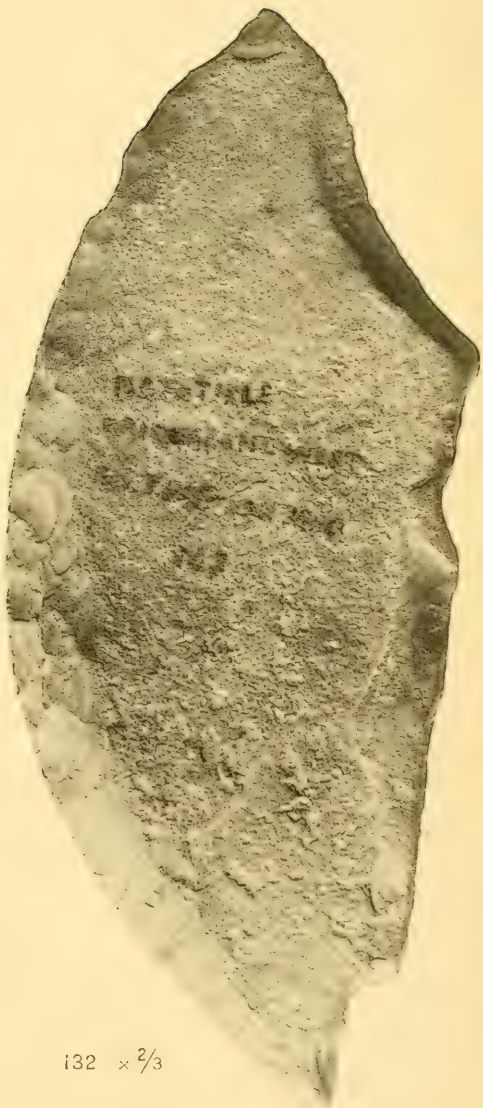


3

131 $\times \frac{4}{5}$



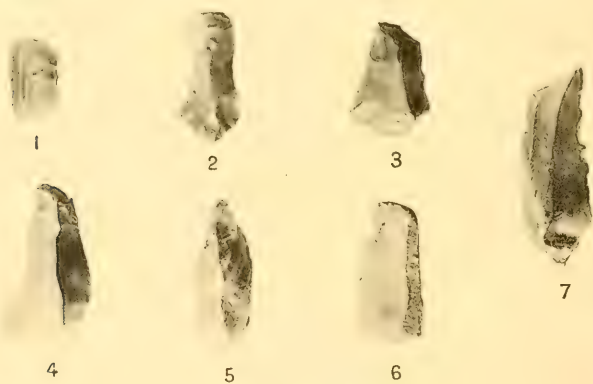
4



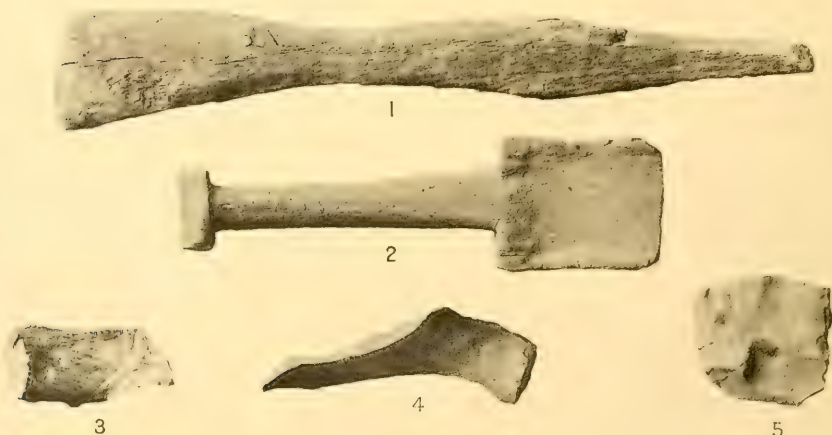
132 $\times \frac{2}{3}$



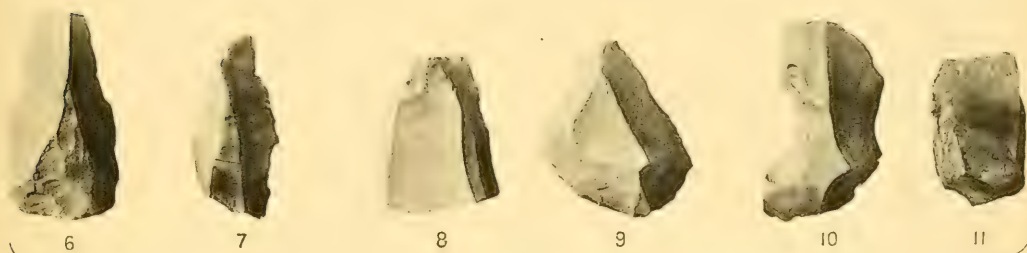
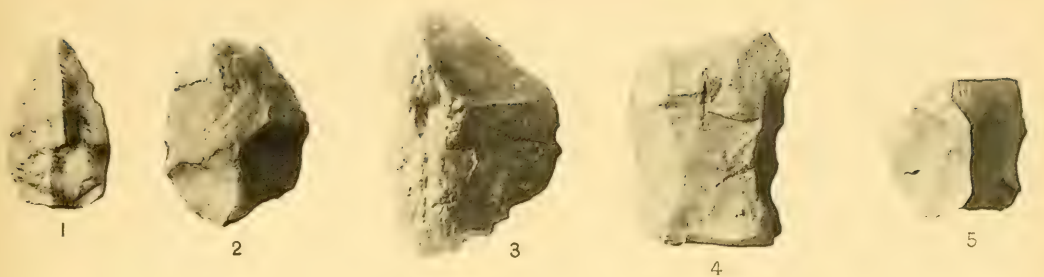
133 $\times \frac{4}{5}$



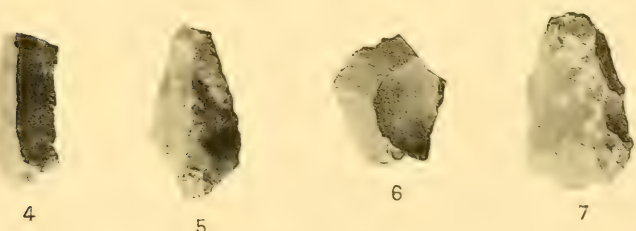
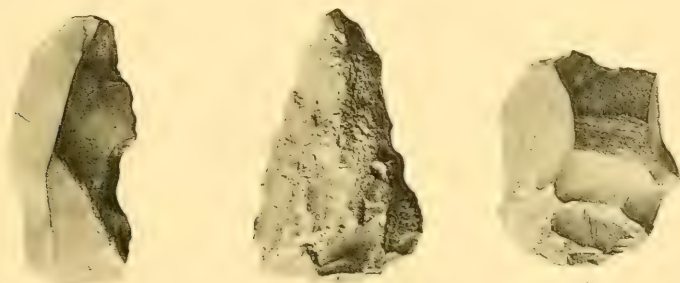
135 $\times \frac{7}{10}$



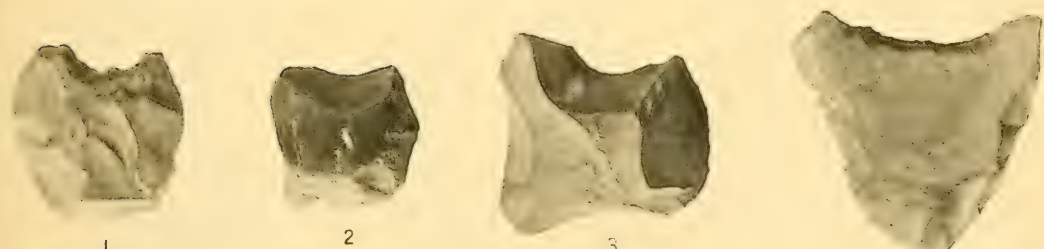
137 *nat. size.*



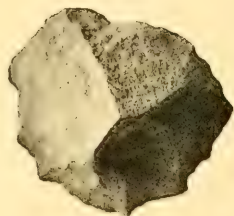
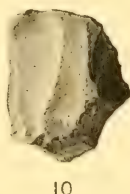
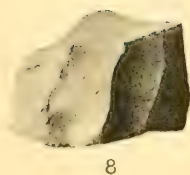
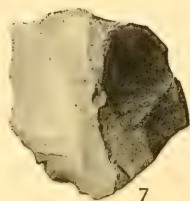
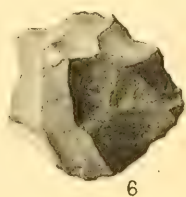
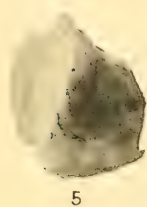
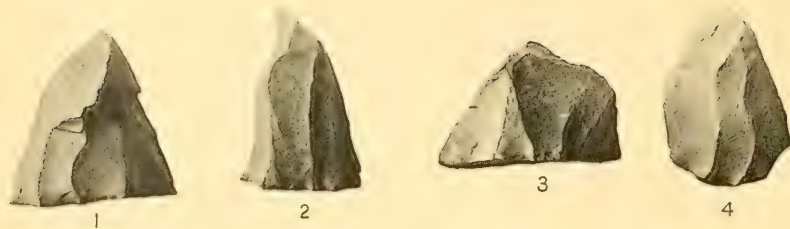
134 $\times \frac{3}{4}$



136 $\times \frac{7}{10}$



138 $\times \frac{4}{5}$



139 $\times \frac{2}{3}$

11



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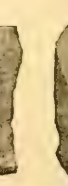
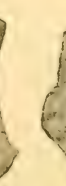
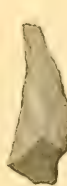
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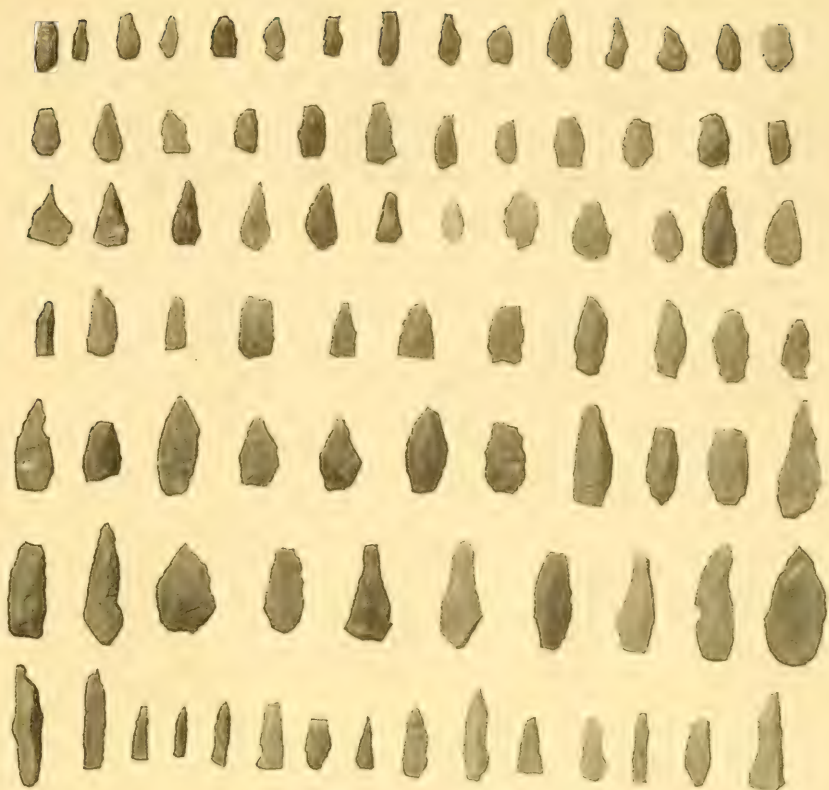
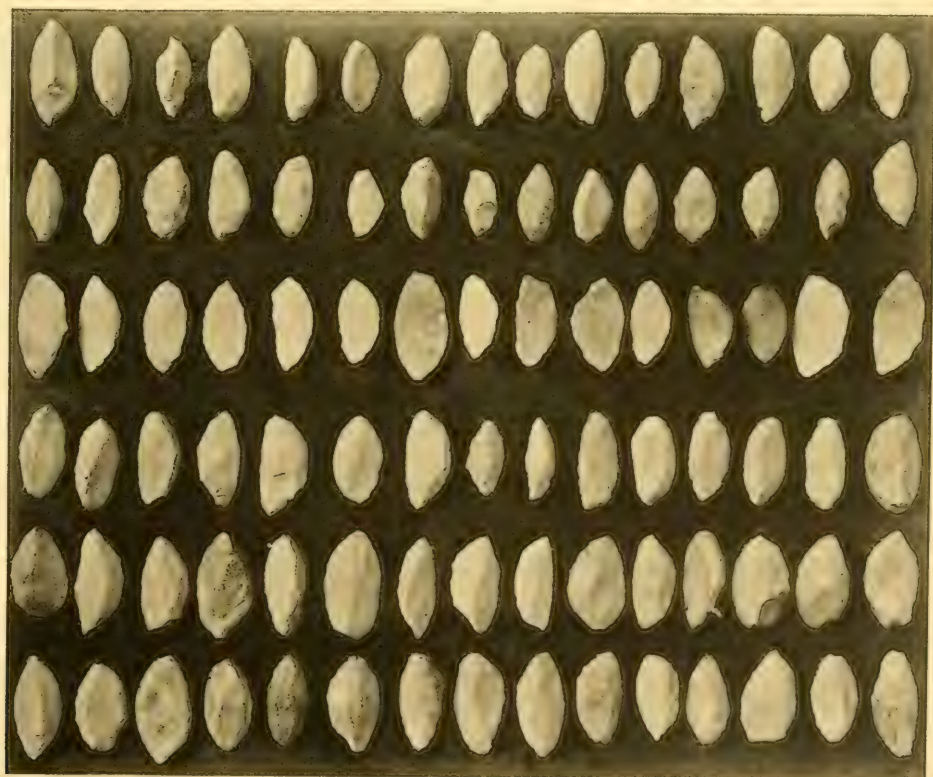
141 $\times \frac{2}{3}$

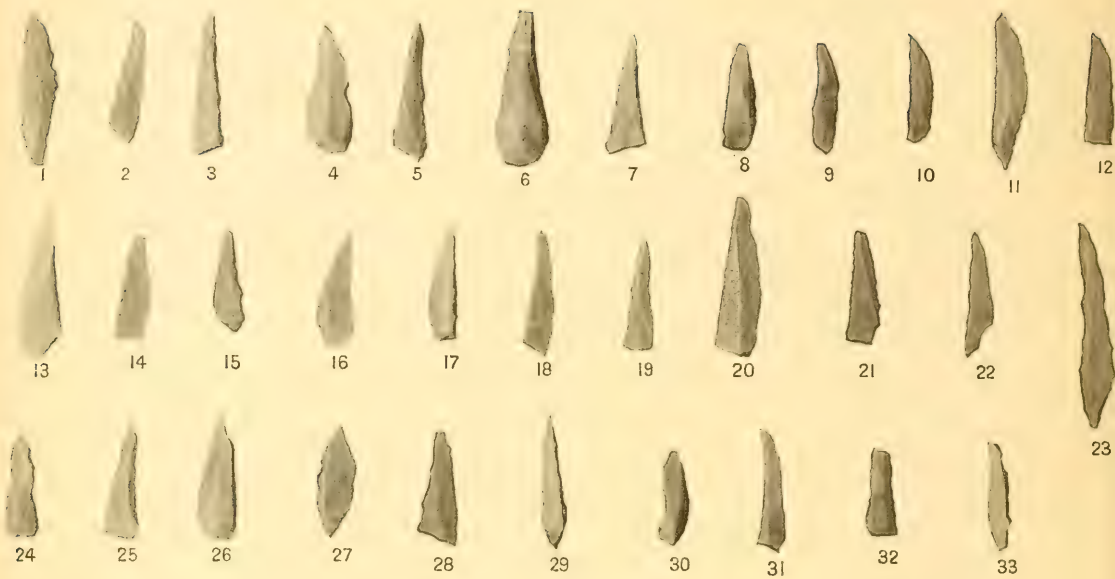


1

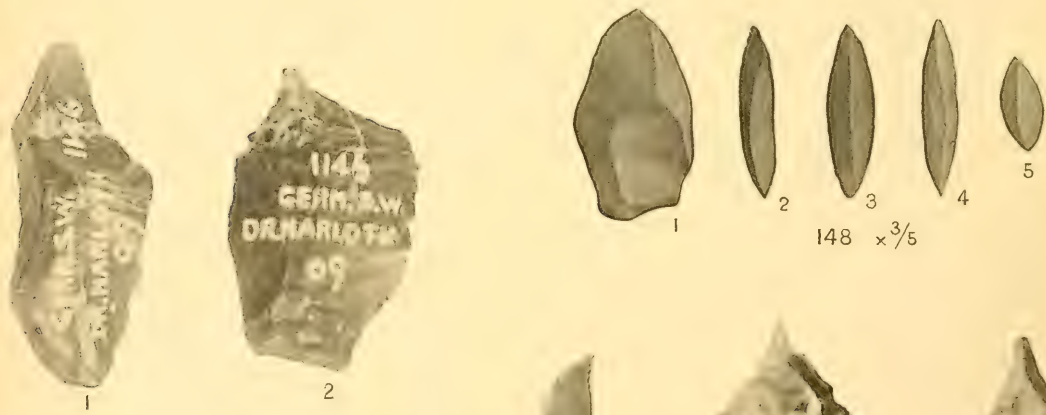
2

142 $\times \frac{1}{2}$

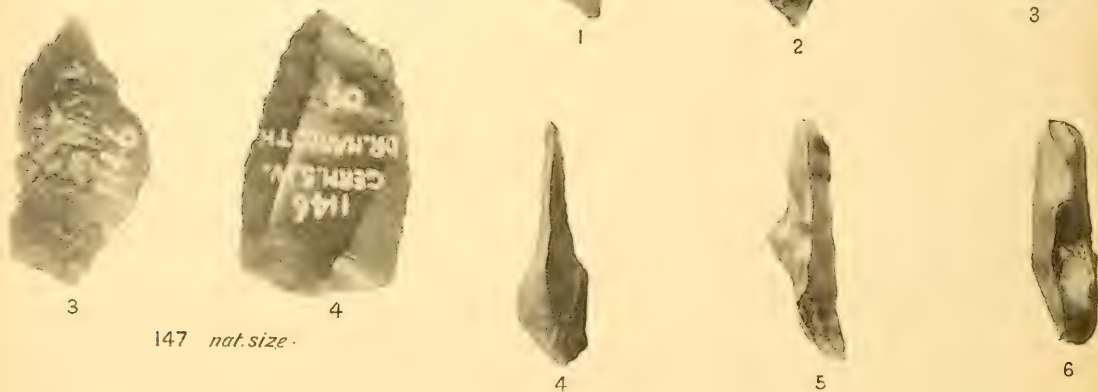
140 $\times \frac{1}{2}$ 143 $\times \frac{3}{5}$



144 $\times \frac{4}{5}$



148 $\times \frac{3}{5}$



147 *nat. size.*

149

Approx. nat. size.



1

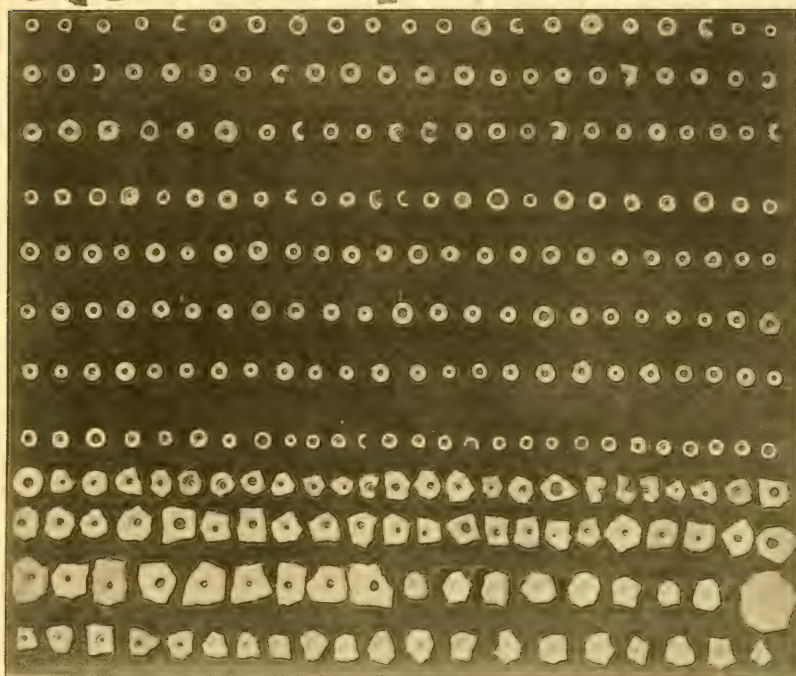


2

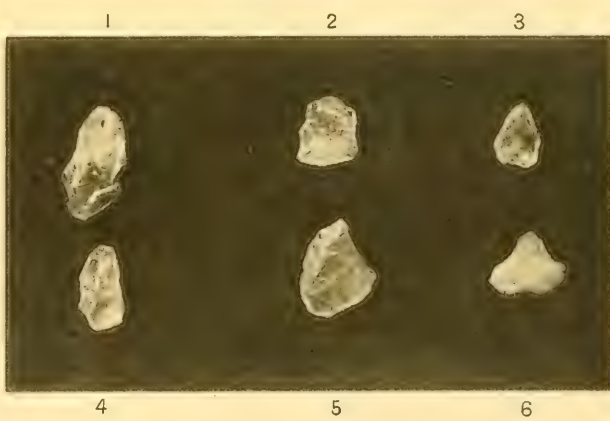
145



150 $\times \frac{4}{5}$



146 $\times \frac{1}{2}$



1

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6



152

Approx. $\times \frac{1}{4}$



7

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11

151 nat. size.





1



2



3



4



5



6

153



1



2



3



1



2



3



4

154



1



2

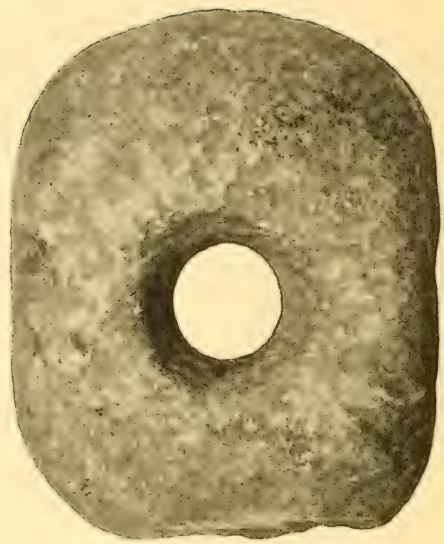


3

156 x 1/2



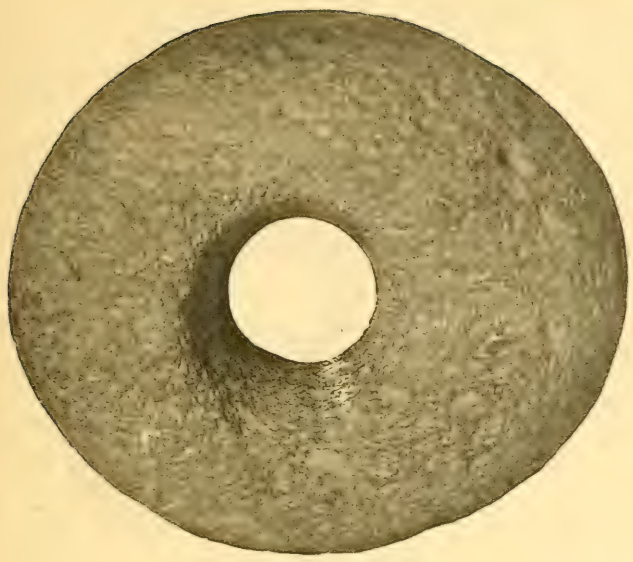
157 $\times \frac{1}{2}$



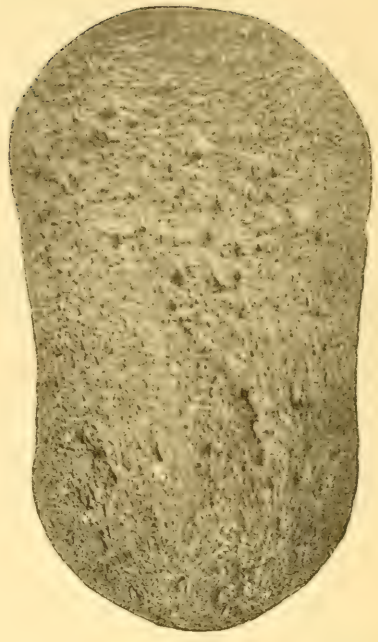
158 $\times \frac{1}{2}$



161 $\times \frac{1}{2}$



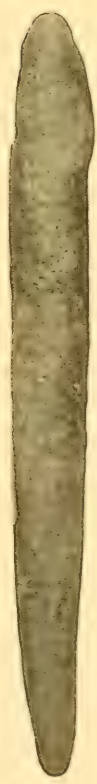
159



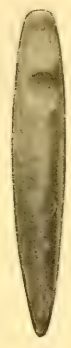
160



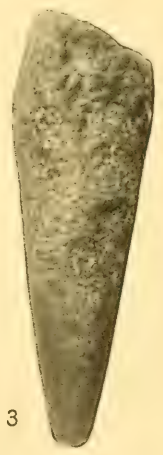
1



5



2



3



4



6



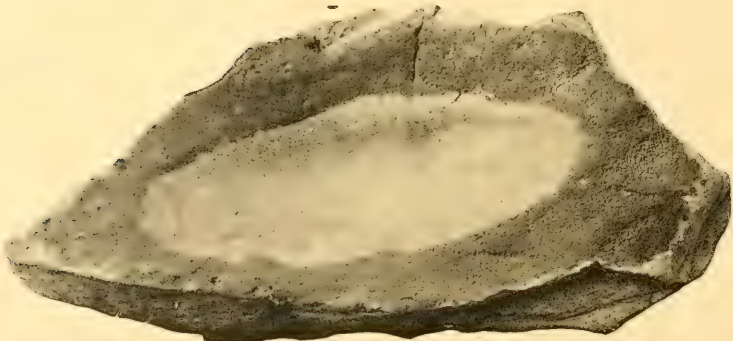
7



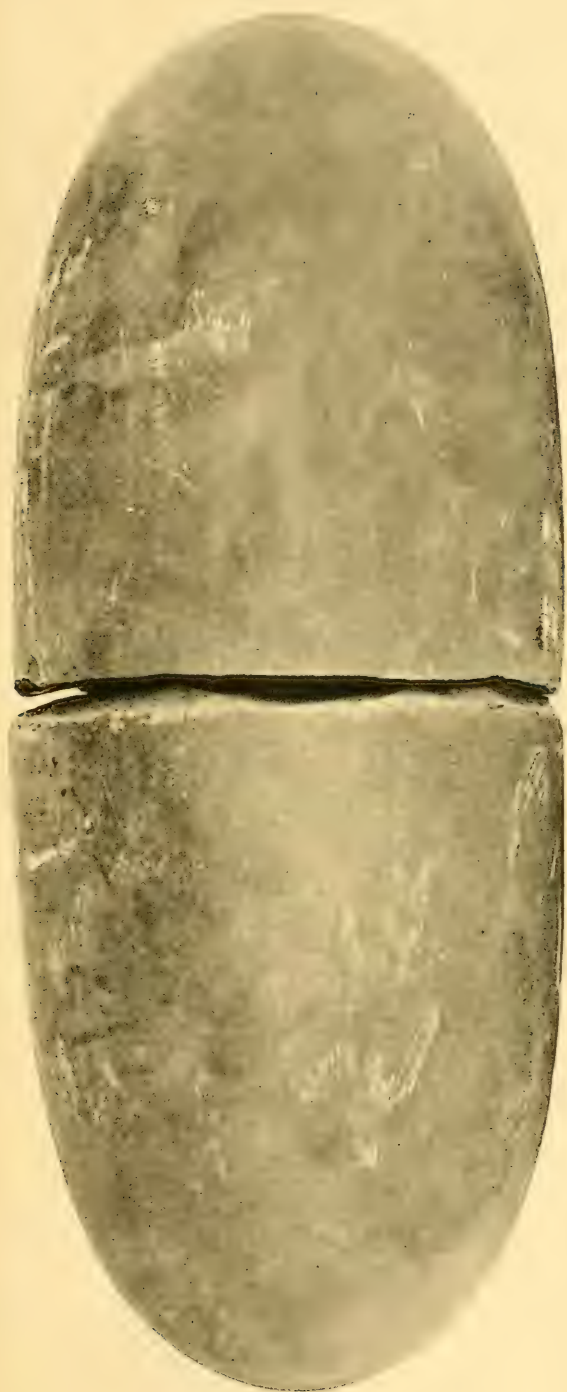
163 $\times \frac{3}{5}$



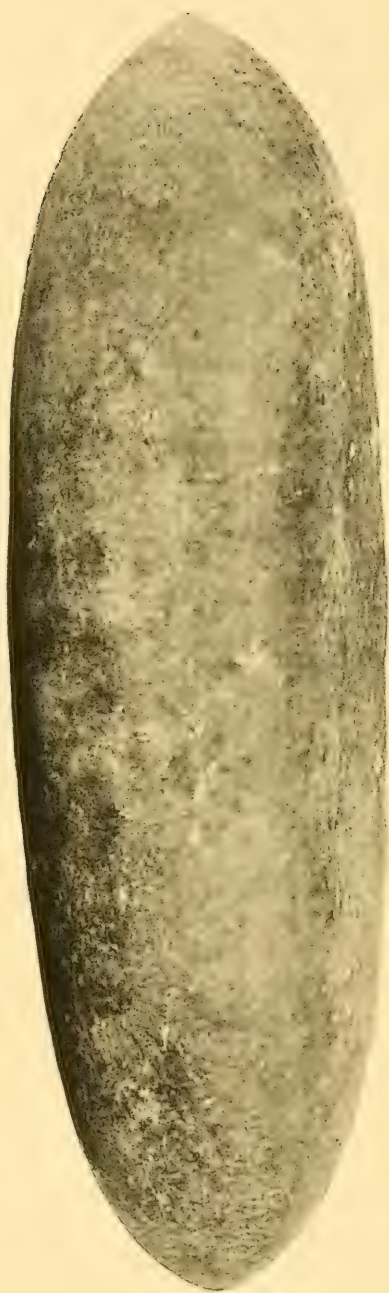
164 $\times \frac{2}{5}$



165 $\times \frac{2}{5}$



166



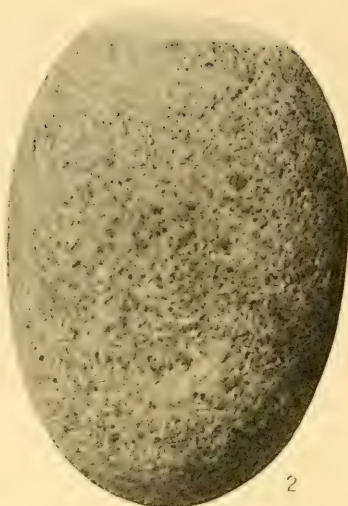
167

Approx $\frac{2}{5}$

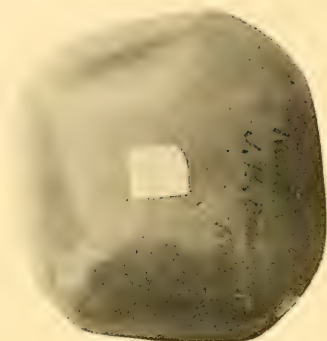


1

168 $\times \frac{1}{2}$



2

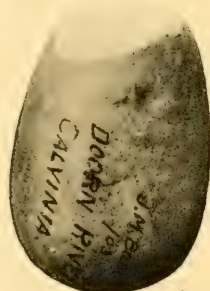


1

170 $\times \frac{1}{2}$



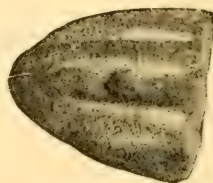
2



3



1



2



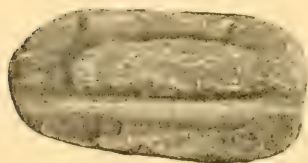
3



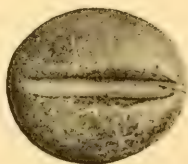
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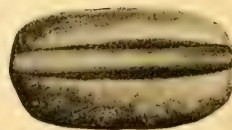
5



6



7



8

171 $\times \frac{1}{2}$



1

169 $\times \frac{2}{3}$



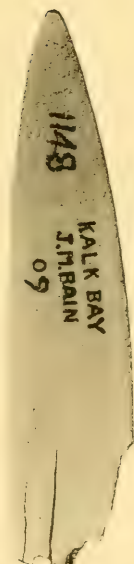
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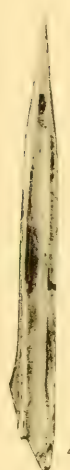
1



2



3

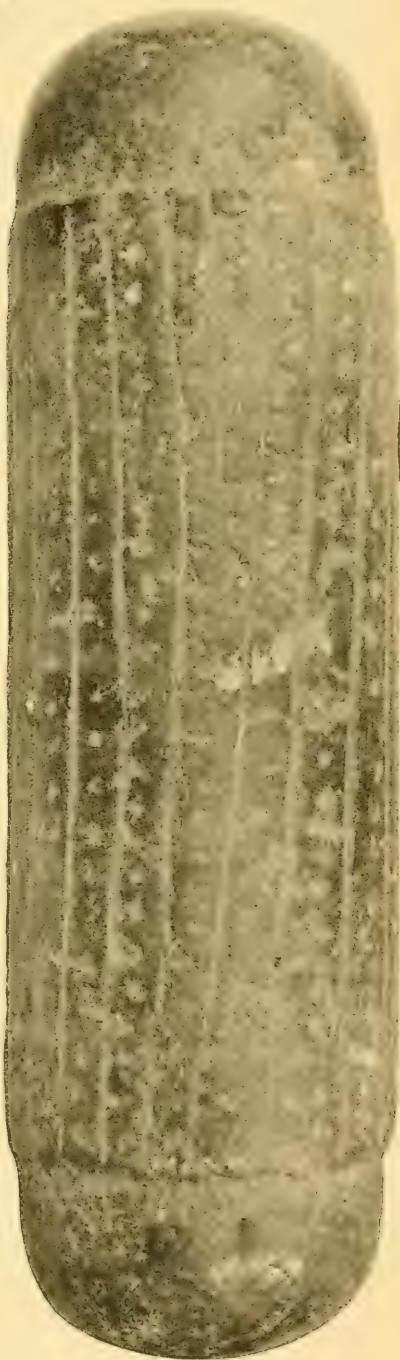


4



5

172 $\times \frac{2}{3}$



173 $\times \frac{1}{2}$



174 $\times \frac{1}{3}$



175 $\times \frac{1}{3}$



178 $\times \frac{1}{3}$



180 $\times \frac{1}{5}$



181 $\times \frac{3}{5}$



176 $\times \frac{1}{3}$



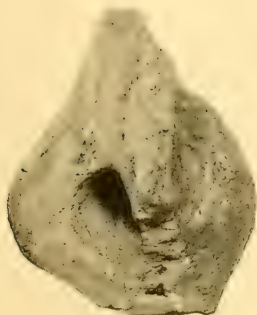
177 $\times \frac{1}{3}$



179 $\times \frac{1}{3}$



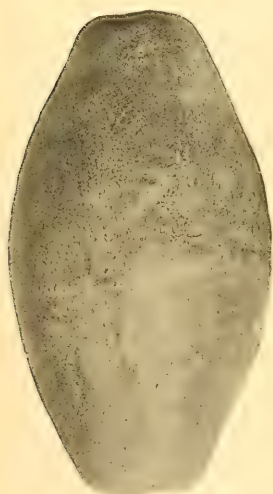
183 $\times \frac{1}{3}$



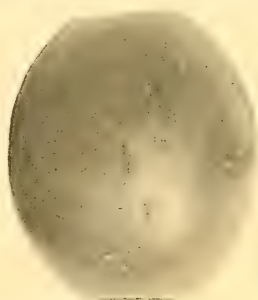
182 $\times \frac{3}{5}$



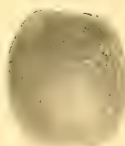
184 *nat. size.*



1



2

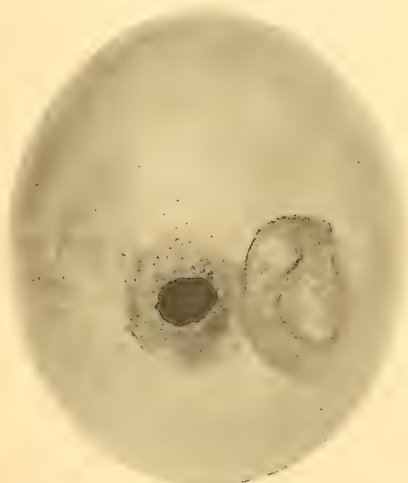


3

186 *nat. size.*



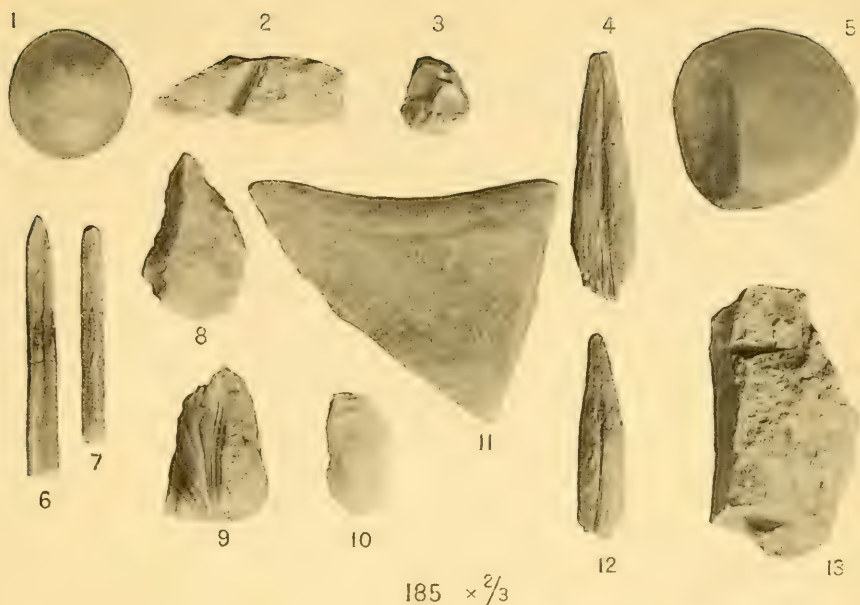
187 *nat. size.*



183 $\times \frac{2}{5}$



190 *nat. size.*



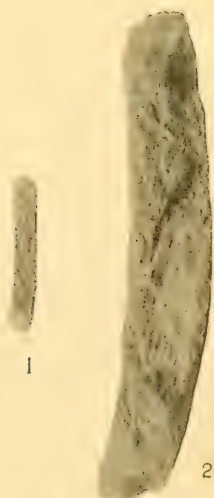
185 $\times \frac{2}{3}$



188 $\times \frac{2}{3}$

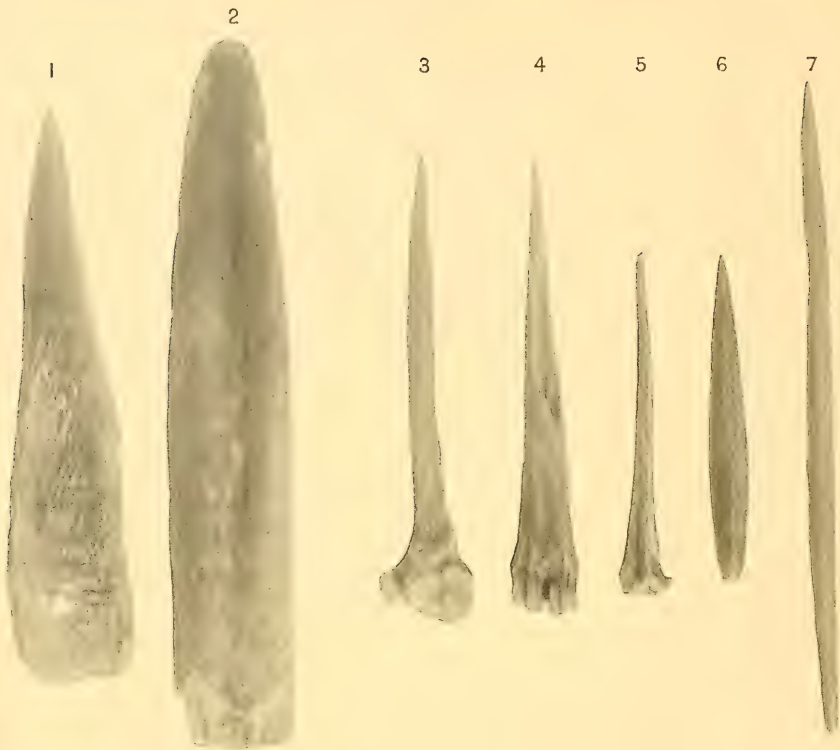


191 $\times \frac{2}{3}$



192 $\times \frac{1}{2}$

193 $\times \frac{4}{5}$

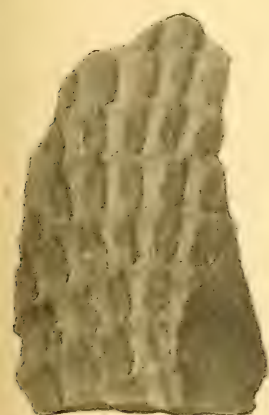
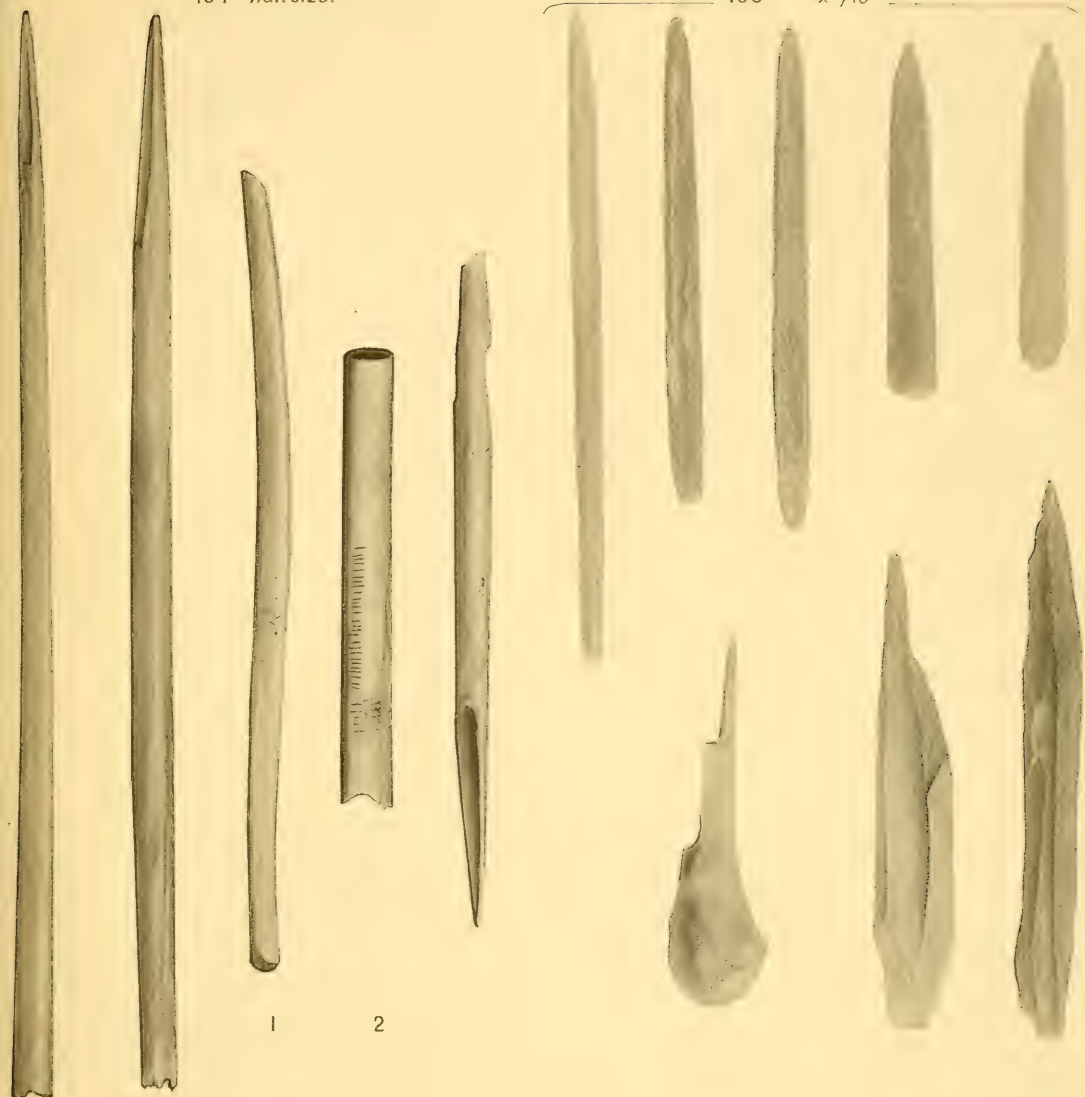


196 $\times \frac{7}{10}$

194 *nat. size.*

195

$\times \frac{9}{10}$



1



2

197 $\times \frac{3}{4}$



3



200 $\times \frac{9}{5}$



201 $\times \frac{7}{10}$



1



2

202 $\times \frac{1}{3}$

199 $\times \frac{3}{5}$



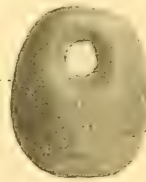
203 *nat. size.*



204 *nat. size*



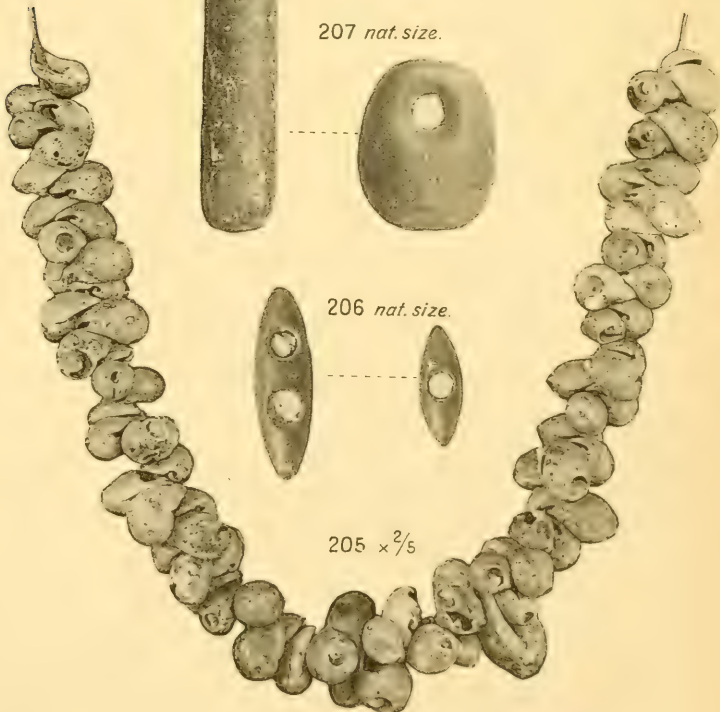
207 *nat. size.*



206 *nat. size.*



205 $\times \frac{2}{5}$





208



209



210



211

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